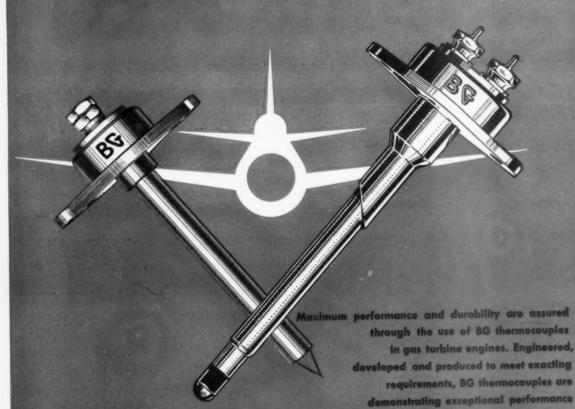
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Highly significant procurement development is Air Force contract with Convair (Ft. Worth) for study of a weapons system management plan. New Pentagon leadership believes it's a major means of cutting lead times—which Secretary Wilson has promised to do.

Plan represents a complete change in AF's way of doing business.

It's a move away from GFAE (government-furnished aircraft equipment), such as electronics, armament, etc., over which plane makers have little control and which often results in performance compromises. GFAE changes involve endless red tape.

It's a move toward giving a manufacturer responsibility for managing performance of the entire project—the same way commercial planes are built.

Faster production for less money can result if the plan's adopted.

Big question in squabble over Air Force budget isn't how many wings there'll be. More important is what kinds of wings are planned.

This information isn't made public. Defense Secretary Wilson could, therefore, promise Congress any number of wings within a fairly wide range. Number could be large (primarily fighters) but industry's production level would still be low. A heavy bomber wing takes three to four times more airframe and engine pounds than a fighter wing.

Best Indication: Wilson's admission that his program calls for a defensive air force, i.e., fighters—although he later said he hopes for both defensive and offensive force.

C-46 problem is due to receive plenty of attention. Passenger version is supposed to meet Transport Category rules by year-end.

There's no modification program under way that would enable the plane to comply. Reason: over half of the 143 available C-46's are owned by Air Force: operators don't want to modify leased planes. However, if AF doesn't recall its C-46's (insiders say it won't), companies may have a chance to buy them.

Current C-46 sales prices are \$125,000 to \$185,000, so modifications can't be too costly. Best bet: use of small turbojet for added power (experiments are under way; one special installation costs about \$30,000, including labor). Much-discussed possibility of using P&W CB-16 engines is dead—cost would be over \$100,000 per plane.

Possible new trend in this year's aircraft union negotiations: consolidation of gains rather than more wage boosts.

Example is new contract signed by UAW-CIO with Douglas-Long Beach. It contains no wage increase—believed to be the first such instance since Korea. However, there's an equally important "first": entire cost-of-living increase was frozen into base pay.

Thus, if CL index moves up, pay moves with it. If it drops, there's no wage cut. Past CL raises are protected.

Any local service airline hopes that CAB would underwrite operation of existing newer-type twin-engine aircraft were dashed in Southwest Airways' rate case: there'll be no mail pay support for SWA's mixed fleet of Martin 2-0-2's and DC-3's. Board was already on record (Pioneer decision) against exclusive 2-0-2 local service operations.

Board still maintains it would support development and operation of a plane specifically designed to meet short-haul needs.

The Washington View

Miracle on Capitol Hill

Not many months ago it appeared that former Secretary of the Air Force, Stuart Symington, now Democratic Senator from Missouri, would have to be drawn out to get his appraisal on the military picture under the new administration. All that has changed now, and he has dropped the silent role and is voluntarily sounding off every time Defense Secretary Wilson makes a move.

Wilson's assertion that the reduced budget for the Air Force, a cut-back of \$5 billion and from 143 to 114 wings, will mean, however, a 30% increase in the Air Force's numerical strength is purportedly based on data that show that 2300 more aircraft will be delivered to the Air Force and 800 more to the Navy in fiscal 1954 than during the present year. This is said to mean approximately 75 more combat planes will be delivered, but 1150 fewer trainers, transports, helicopters, and liaison aircraft will be produced.

Wilson's statement though, has brought nothing but mockery from Senator Symington. The former Air Force Secretary, crediting an anonymous source, he said: "This new stretchout proves we now have the miracle model—a longer car with a shorter wheelbase, a narrower car with more room for the family, a car with half the horsepower and twice the speed and pick-up."

Hollow Victory for the Carriers?

The reorganization plan to transfer payment of air mail subsidies from the Post Office Department to the Civil Aeronautics Board, which President Eisenhower sent to Congress last week, went to Capitol Hill without the controversial "cost principle" for fixing compensatory rates. However it is known that the first inclination at the White House, when the move was under discussion, was to embody the cost principle in the plan.

At that time the airlines got to work. Consistently having shown an antipathy for any change to basing compensatory rates on the cost of rendering the service, rather than on the basis of "fair and reasonable" rates, the airlines again made their feelings known in government circles. Stuart G. Tipton, general counsel of the Air Transport Association, explained their position and made their arguments clear at the various interested agencies.

The fact that their arguments prevailed may be a hollow victory, though. In his message accompanying the plan, the President suggested that Congress enact legislation, notwithstanding the plan, to amend the Civil Aeronautics Act to provide specifically that compensatory rates for mail transportation should be based on the cost of service.

The fact that the cost principle has been the stumbling block in the past to any successful enactment of legislation for the separation of subsidy from air mail pay leaves many to believe that the President left it out to ensure Congressional approval of his plan.

to ensure Congressional approval of his plan.

Under the plan the Post Office will continue to pay the airlines for actual mail transportation, but CAB will handle that portion of present air mail payments that is subsidy. The plan is scheduled to become effective October 1 unless vetoed by a full majority of either the House or Senate.

Mexican Monkey Business?

The strange case of former President Truman's summary action in terminating the three U.S.-Mexico air carrier certificates of Braniff, Eastern, and Western has now been turned over to the Justice Department. It seems that the new administration wants a legal review on whether a Chief Executive has the power to terminate certificates in the manner followed by Truman.

Although the three certificates had never been implemented by the holders because of bilateral difficulties between the two countries, they were considered as very valuable franchises. And, because of the very large competitive stakes involved, some airline parties feel one of the major domestic airlines stirred up the White House interest and prompted the revocation order.

This "monkey business" went so far, it is said, that advice was even offered Truman on the preparation of the "withdrawal" notice which he wrote last September to CAB. To confirm the "finality" of the order, the airlines further report, a second letter was prepared for Truman's signature, which he sent only a few days before leaving office.

This same fringe third party is seen as still very much in the picture and not solely as a sideline figure. Even before Justice could ask CAB and the carriers involved for comments on the matter, two briefs—not one, but two, were filed with the Department supporting the former President's action.

Answers from the three carriers have not as yet been received and CAB is hard at work on its opinion to be sent to Justice. After all the facts are in, Justice will send its opinion to the White House on the legality of Truman's action on the Mexican permits.

. . . Preble Staver





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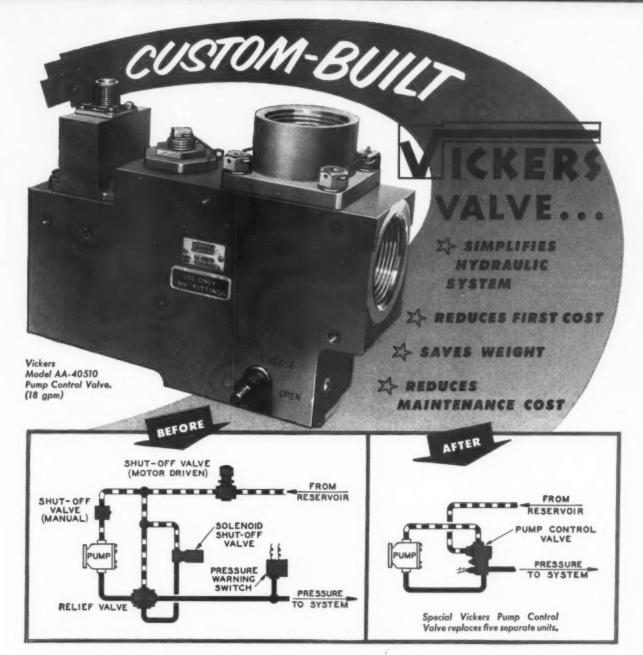
Where & When

- June 9-11-2nd Int'l Aviation Trade Show, Statler Hotel, New York.
- June 11-13—5th Annual All-Woman Int'l Air Race, Welland, Ont., Canada, to New Smyrna Beach, Fla.
- June 16—ATA Board of Directors Meeting. Carlton Hotel, Washington, D. C.
- June 17-18—ADMA Mid-Year Meeting, Chateau Lake Louise, Alberta, Canada.
- June 20—WNAA Banquet celebrating 25th anniversary Municipal Airport, Tulsa,
- June 22-26—American Society for Engineering Education, Univ. of Florida, Gainsville.
- June 29-July 2—ASME Semi-Annual Meeting, Statler Hotel, Los Angeles, including Air Cargo & Heavy Press for Light Metals Sessions.
- July 1-3—University Aviation Assn., Summer Conference, National College of Education, Evanston, Ill.
- July 3-7-7th All-Woman Transcontinental Air Race (sponsored by 99's).
- July 9-12-6th Annual Aviation Exposition, Detroit Wayne-Major Airport, sponsored by Aero Club of Michigan.
- July 15-16—IAS Annual Summer Meeting & Honors Night Dinner, IAS Building, Los Angeles.
- Aug. 19-21—Western Electronics Show & Convention, Municipal Auditorium, San Francisco. Sponsored by IRE 7th Region and WCEMA.
- Aug. 20-23—Air Force Assn., 7th Annual National Convention, Statler Hotel, Washington, D. C.
- Sept. 5-7—National Aircraft Show & 50th Anniversary of Powered Flight, Dayton, Ohio.
- Sept. 21-25—Instrument Society of America, 8th National Instrument Conference & Exhibit, Chicago.
- Sept. 27-29—Int'l Northwest Aviation Council, 17th Annual Conference, Gear-hart, Oregon.
- Sept. 29-Oct. 1—Aircraft Spark Plug & Ignition Conf., Champion Spark Plug Co., Toledo, Ohio.
- Sept. 29-Oct. 3—SAE, Aeronautic Meeting & Aircraft Engineering Display, & Aircraft Production, Hotel Statler, Los
- Sept. 30-Oct. 1—AIEE, Aircraft Electric Equipment Conference, Seattle.

INTERNATIONAL

- June 16-ICAO Assembly, Brighton, England.
- June 26-July 5—Int'l Aircraft Engineering Convention, Paris; and Int'l Aircraft Show, Le Bourget Airport, Paris, sponsored by French Aircraft Industries Association.
- July 12-19-2nd Int'l Air Show, San Nicole Airport, Venice, Italy.
- Aug. 25—ICAO Legal Committee, Rio de Janeiro.
- Sept. 7-13—SBAC Aircraft Show & Flying Display, Farnborough, England.
- Sept. 7-18—IAS-RAeS, 4th Int'l Conference, London, England.

 Oct. 5-10—IATA Annual Assembly, Montreal, Canada.
- Oct. 16—International Air Race, England to Christchurch, N. Z.
- Nov. 1-22-IATA, Traffic Conferences, Honolulu.



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Letters

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PLAYING FAIR

To the Editor:

I was indeed surprised to read your editorial in the current issue of AMERI-CAN AVIATION. I am forced to construe it, much against my will, as more sour grapes.

The British are not complaining without reason. The way CAA is fumbling about with its jet policy, one can hardly blame the British aviation industry for wondering if the only holdup is concerned with technical matters. We have persisted in denying a certificate for the Comet I, or IA. You say that it is because they have not sent us a plane.

It should not be necessary for a nation like Britain to have to do this. They accept our word that a plane is airworthy; there is no reason why we should not accept theirs, unless it really is that we do not want the competition. Be their official body part of the government, or just backed by the government, does not really matter, because they have the same high standards that we expect and get. They do not say, "Oh, let's pass the thing, the worst it can do is kill off a bunch of passengers." So let us get off our high horse and say that if you pass the Comet I and IA, that's OK by us.

You, as an aviation editor, are very blind to the situation concerning the Comet III, if this editorial is indeed your point of view. They do not want us to certify this plane before it is built, they don't want us to "Make a special rule" just this once; but what they do want us to do is simply to make a few rules. Then they can be built right into the plane instead of having expensive modifications and delays. So let us set a standard for them to meet if it is to be our standard, and not wait until they have built it and then change everything.

It is high time that we had a jetliner, and we should not hold it against someone just because they beat us to it. We accept their engines in good faith, so why not their airframes?

Let us play fair and set up a standard for the Comet III, and issue certification for the earlier models. Because we don't, does not change the fact that the plane is as good as we need. The Boeing when it appears will be built to correct standards, even though the CAA has not made them public, you mark my words, and record them if you wish.

All this talk about jets being too expensive to operate, and that the time is not yet ripe, in all the reports and articles that have appeared, is nothing but a lot of lame excuses, and everyknows it. Our major air lines want a jet as bad as anyone, and our public will be just as proud of it when

it arrives, and they will ride in it, if it should appear in service tomorrow.

WE DO NOT HAVE TO BUY COMETS, but we should not go out of our way to prevent them from trying them to us. It is common knowledge that Detroit has long been responsible for high tariffs on imported automobiles, because they just don't want the competition. Heaven forbid that our aviation people follow suit.

You publish a grand piece of technical literature, only I say, play fair, take a look at the Canberra, take another look at the Comet (three crashes acknowledged)-remember the DC-6and then take another look at your editorial.

D. J. M. BLADES

New Orleans, La.

BLEAK OUTLOOK

To the Editor:

As you so rightly say, much non-sense is written over the controversial subject of the British "Comet" jet air-liner and the attitude of the CAA. Some of this can be attributed to a justifiable national pride on the part of Great Britain in finding itself the first nation to operate turbojet and turboprop aircraft in regular service. It is also understandable that you, sir, should defend your own CAA when you think it is being unjustly criticized.

Nevertheless, since you have been quick to pounce on Lord Brabazon for having accused the CAA of failure to certificate a non-existent airplane, must, in all fairness, point out that the CAA certification tests you infer the Comet III may be subjected to are also non-existent. What, it seems to me, the argument is about is this: the de Havilland Company has no Comet III but is taking active steps to produce one (for the American operator); the CAA has no set of regulations for the certification of such an airplane but it is not taking any steps to produce one.

I think you are being a little un-

fair in your description of the composition of the Air Registration Board. To begin with, you must be well aware that the Board itself is made up of extremely reputable people, and to imply (although you do not specifically say so) that the executive members correspond in England to the CAA is indeed grossly misleading your readers.

The ARB, roughly equivalent to the CAB (also composed of "flag-wavers"), is supported by a very able group of technical experts who more nearly correspond to the CAA. It is indeed surprising to find you condemning a firstclass private institution as being less efficient than a government department.

Even more surprising is to read the obviously uninformed statements attributed to Mr. Fred Lee, Civil Aeronautics Administrator, during his recent address in Kansas City to the Congress of Civil Aviation Conferences. You must be well aware of the extraordinary utterances to which I refer, so that I need not waste space here in reminding you, sir, of the pitiful outlook of one who is charged with bringing American civil air regulations (still unchanged since 1937) up to date.

The outlook is indeed bleak for American and British jet aircraft manufacturers alike if they hope to obtain a U. S. certificate of airworthi-

J. W. TRURAN 223 International Aviation Building Montreal 3. Canada

(Apparently reader Truran has missed a good many chapters in the story on CAA's jet transport certification activities. CAA has a full-time jet transport evaluation team which for months (AMERICAN AVIATION, February 2) has been devoting its time to setting up U. S. requirements. It has a clearly established timetable and has issued a well documented report on its indiangs to date. This report outlines the problems, discusses their importance, and indicates the nature of CAA's proposed rulings. Copies are now being circulated for industry comment.

Thus, contrary to reader Truran's comment, CAA's regulatory requirements are more tangible today than is the Comet III. Reader Blades insists: "We have persisted in denying a certificate for the Comet I or IA' It is an established fact that neither de Havilland nor the Air Registration Board has asked that the Comet I or IA be certificated by the U. S.

We know and respect the individual technical members of the Air Registration Board, such as its secretary and executive director. R. E. Hardingham. But the chairman of the AIRB, Lord Brabazon, was talking through his hat. We sent a man to the ARB to ask Lord

nical members of the Air Registration Board, such as its secretary and executive director, R. E. Hardingham. But the chairman of the ARB Lord Brabazon, was talking through his hat. We sent a man to the ARB to ask Lord Brabazon to elaborate on his toose public talk on Comet certification but by that time the more conscientious members of the Board had managed to shut him up. No comment.

The real tragedy is this: CAA fumbled the politics of certification. It could have granted reciprocal certification rights, as is now done with piston engine planes. Under this arrangement the U. S. would still reserve the right to require further testing and proof of compliance with U. S. regulations prior to certification. Instead CAA, in its attempt to handle the new regulations on a schedule which would permit it to correlate the best U. S. thinking on the subject, vaised the long range issues immediately. While this action may have proved valuable to foreign and domestic manufacturers, since it gave them specific warning of CAA's thinking on troublesome items, it left the U. S. wide open to charges of non-cooperation.—Ed.)

AGREE TO VALIDATE

To the Editor:

Misunderstanding exists, not only in England but also in the U. S. A., concerning the problem of American airworthiness certification of the Comet, and your editorial under the heading "Acute Coronationitis" (AMERICAN AVIA-TION, May 11) still does not make it quite

Obviously we do not expect the CAA to certify an aircraft before it exists-any more than we expect the British Air Registration Board to do so.

We do hope, however, that the American authorities will agree to validate British airworthiness certificates for jet aircraft, following the example of all other countries. We hope that they will come across to England and study the requirements, procedures, tests and standards by which the British Air Registration Board, concerned with Comet design since 1946 and flight performance since 1949, has certified the Comet 1 and 1A, and incidentally the Vickers Viscount, and is preparing to certify the Comet 2 and the Comet 3.

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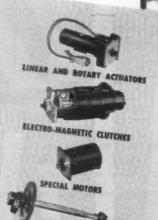
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Editorial

Hold the Fire

BETWEEN Defense Secretary Charles E. Wilson, who is setting an all-time record for poor public relations handling of his proposed budget and what it will accomplish, and the group of Congressmen, anonymous Pentagon partisans, and ax-grinding newspaper columnists who have distorted and mis-

construed the budget plans out of all true perspective, the nation's future defense spending is in a confused

state.

W. W. P.

Nothing has happened, however, to alter our previous stand that the budget and spending plans appear to be quite reasonable and sensible as of this date. Not

until the House appropriations committee reports out the bill later this month will the battle lines be more properly drawn. It's too early for squawking or detailed appraisal.

Sandbagging

The latest convention of the Aviation Writers Association has closed and a multitude of industry hosts in the Dallas-Fort Worth area went all-out to provide the members and their guests with an abundance of hospitality. We think it is time to tip off AWA, however, that it is wearing out its welcome in a good many places and that it needs to re-evaluate its membership and its position as an organization purporting to represent aviation writers.

We bring this up this way because the aviation industry is in no position to offend AWA by telling the organization what it really feels. We bring it up too, because American Aviation Publications has a good many members in AWA and we wish to assume

our share of responsibility.

The truth is that in the past few years AWA has gotten the reputation of being free-loading junketeers instead of the working press. It is difficult to find a real aviation writer at a convention because of the large number of camp followers consisting of press agents, free lancers, former members, and others who partake freely of the hospitality which industry wants to give to bona fide aviation writers (about one out of four at a convention is bona fide). The spectacle at Fort Worth where affiliate and campfollowing guests grabbed expensive hats donated by Amon Carter, the famous publisher, and intended for bona fide aviation writers, was an adolescent dead-end-kid spectacle which should shame AWA into a genuine housecleaning and a re-dedication to the organization's original aims.

It has become costly to play host to AWA.

There are many in the industry who privately feel that AWA has become a sandbagging organization which expects the utmost in lavish hospitality with scarcely a courteous "thank you" in return. Call it a form of blackmail if you like, but that's the true picture. Let AWA return swiftly to a genuine working group or past and continued abuses will discredit the outfit beyond all repair.

Enter Mr. Hopkins

Purchase recently of the controlling interest in Consolidated Vultee Aircraft Corp. by General Dynamics Corp. from Floyd Odlum's Atlas Corp. is one of the biggest industry deals in many a year. But more than this, it brings into the U. S. aircraft industry a figure as dynamic as the name of his company implies—John Jay Hopkins. Mr. Hopkins made his debut into aviation several years ago when his company acquired complete ownership of Canadair, Ltd., in Montreal. Canadair has been an outstanding success ever since. Convair is now a big new undertaking for a man who thrives on challenges. We have no doubt that Mr. Hopkins will make his mark as a vital new force in the U. S. industry.

Memo: Read These

There are two very noteworthy publishing events worth your attention these days. The first, of which you're doubtless already aware, is the very excellent serial now being carried in *The Saturday Evening Post*, "33 Hours to Paris," by Charles A. Lindbergh. It's a classic, a "must" for anyone in aviation. The names of old-timers sprinkled throughout the series to date bring up many memories of earlier days. It's a beautifully

written and exciting story.

The second is a book by Quentin Reynolds just published by Appleton-Century-Crofts, Inc. (\$3.95). This title is The Amazing Mr. Doolittle but it should have been The Amazing, the Incredible and the Magnificent Mr. Doolittle. Anyone who doesn't buy and read this book ought to have his head examined, because it's the well-told story of a very wonderful guy who is not only a lovable natural character himself but who is a great American and has contributed a very great deal to aviation. If you think you know everything about Jimmy Doolittle, we'll bet you a hundred to one you'll learn a lot more about him in the Reynolds book. It makes one feel a lot better about the world to read this fascinating story and remember that there are such wonderful guys existing. If you think we've gone overboard on superlatives—read it and find out for yourself. Twenty-five lifetimes in one, that's Jimmy Doolittle.



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Industry Spotlight

A new jet engine rated at 20,000 pounds static thrust has been developed by de Havilland Aircraft Company's engine division. Known as the Gyron, the new engine has been under test since January of this year and has been running at about 16,000 pounds thrust. The Gyron uses a seven-stage, single-spool compressor of titanium construction.

Bristol Aeroplane Company has abandoned work on the Satin engine, the 4,000-pounds-thrust engine which was to have powered the Folland FO 141 Gnat stripped down fighter. The engine, weighing 800 pounds, was abandoned in a general re-evaluation of Bristol development activities even though some 50 engines were under way.

Britain is developing a low level attack bomber which will push wing loadings of piloted aircraft to a new high, probably in the order of 300 pounds per square foot. This means the ship will have to use assisted take-off, probably rocket assist.

Chance Vought Aircraft has been picked as the winner of the Navy's day fighter competition. A total of 18 designs were submitted by eight firms, including Douglas, Grumman, Lockheed, McDonnell, North American, and Temco.

A new method of designating new military aircraft is being discussed in the Pentagon. Officials feel that a better method of distinguishing the functions of the various types of planes is needed.

The Handley-Page HP (R)3, another of the so-called DC-3 replacements, is a modified Miles Marathon fitted with four Alvis "Leonides Major" engines, rated at 870 horsepower each. The Marathon, originally equipped with Mamba turboprop engines, is now being fitted with the Leonides engine and will fly as a test bed for this installation starting in August.

Distance measuring equipment, now announced by two manufacturers, is the center of an "air navigation bombshell" which is bound to explode before the year runs out. Airlines contend they won't buy the equipment until all the wrinkles are ironed out of the VOR system installation, but the bigger question in the industry seems to be: "Is the DME which manufacturers have announced the one that will be adopted this year as the (common system) DME?"

Donner Investment Co. of Philadelphia, owned by the old Donner steel interests, has strengthened its control of Air Associates, Inc., until now it owns an estimated 70% of the stock. Last summer it gained control by buying the 40,000 shares held by Gilbert Colgate, former Air Associates board chairman. Donner is understood to have invested about \$1,750,000 in the company. Despite wide industrial interests, Air Associates is Donner's first aviation firm.

Industry Miscellany

USAF has demanded return of the airport surface detection equipment now used by the Port of New York Authority by August 21, 1953, Airborne Instruments Laboratory is reported developing improved ASDE under a Rome Air Development (ARDC) contract for delivery in December, 1954 . . . Early this month the 306th Medium Bombardment Wing, based at Mac Dill Field, Fla., will make a mass flight across the Atlantic to Britain for a three-month training stint there . . . RAF has contracted with E. K. Cole, Ltd., London, for a number of one-man GCA installations reported to cost less than \$14,000 and weigh about 1500 pounds. ANDB is now testing one such unit at Quantico, Va. . . Grand Central Aircraft Co., Tuscon, Ariz. has delivered the last of 275 modified B-29's to the USAF, completing a \$30 million program . . . U. S. Navy is installing high speed refueling systems, 400 gallons per minute, at 18 naval air stations . . . Exports of civil aircraft weighing 6,000 pounds or less totaled 42 units in April . . . North American's Downey, Calif., plant has developed a fire- and crash-proof flight recorder known as the NADAR.



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B. F. Goodrich brakes cut weight to stop faster airplanes

AIRPLANE BRAKES have a tougher job to stop today's faster-landing airplanes than they did even five years ago! They have to give this improved performance and still be made lighter to allow for increased pay loads—whether it's bombs, people or cargo. Here's how B. F. Goodrich brakes have kept their weight in trim, improved braking efficiency for faster-landing B-52's, the Boeing jet shown above.

The B. F. Goodrich expander tube principle has the basic advantage that braking action applies equal pressure over the full circle of the drum, giving greater braking power, better load distribution. Today's B. F. Goodrich brake has a new, narrow-cavity tube

that gives even more braking pressure, with less fluid.

Another advance in BFG brake design is the new kind of brake block. No rivets are used. The lining is cemented onto a light magnesium shoe. This means that brakes last longer, because more of the lining is used. Elimination of rivets permits full, positive braking down almost to the metal backing.

Landings on the new brakes are safer, smoother. The brakes respond smoothly and quickly to minimum pressure, take emergency overloads better, cannot lock or grab. There are other advantages. Ventilated shoe dissipates heat more rapidly. Retractor spring action eliminates wear due to drag. Relining can be

handled with a screwdriver and wrench.

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Different Stories . . . Same Budget

Wilson & Kyes

- Air Force will have 114 wings by June 30, 1954, and 120 wings one year later. New Joint Chiefs will review needs to determine whether 143-wing goal should be reviewed.
- Manpower can be reduced from present 980,000 to 900,000-915,000 by June 30, 1955, without any loss of strength.
- Air strength will be supplemented by equipping the Air National Guard and Air Force Reserve with modern aircraft.
- Enough money remains for the USAF so that no combat planes will be eliminated from the schedules set up for fiscal 1954. If more money proves necessary, Congress will be asked for it in a supplemental request.
- The interim 120-wing goal is a realistic appraisal of what aircraft firms can produce. The 143-wing goal was unattainable except by taking delivery of the wrong types of aircraft.
- The \$15.1 billion the USAF is listed to spend in fiscal 1954 is not necessarily a limitation, although "we hope to keep it around that level."

"Official USAF Statement"

- USAF now has 106 wings, will reach 110 by June, 1955, and 120 by June, 1956.
- If a strength of 965,000 is not available by the end of fiscal 1956, the USAF cannot man the 120 wings.
- Besides reducing the USAF goal from 143 to 120 wings, the budget cuts will also result in the elimination of four wings, 11 groups, 47 squadrons, and two flights from flying support units, plus 89 non-flying logistical support units.
- Planes programmed for delivery in fiscal 1954 and 1955 will have to be postponed until 1956. In terms of airframe weight, the reductions will mean a seven per cent drop in deliveries for 1954 and 19% for both 1955 and 1956.
- The 143-wing goal, which represented "the absolute minimum in order to attain adequate national security" from Russia, would have been attained at the end of fiscal 1955. (Other USAF sources placed the attainment date at January 1, 1956.)
- The new budget limits Air Force expenditures to \$15.1 billion, and can be achieved only by delaying or canceling equipment ordered with funds from fiscal 1953 or before.

Storm Breaks Over Air Force Budget Cuts

Conflicting conclusions fly thick and fast on effect of stretch-out; Eisenhower victory seen.

By ROBERT M. LOEBELSON

IT WAS rapidly becoming obvious last week that the Administration eventually would win the "battle of the air power budget" despite floor fights planned by Democrats and some Republicans in both houses of Congress. But it was also apparent that the \$5.1 billion reduction for the Air Force would be passed because of President Eisenhower's military prestige, rather than because of the Capitol Hill testimony of Defense Secretary Charles E. Wilson and his deputy, Roger M. Kyes.

A letter from Budget Director Joseph M. Dodge to Secretary Wilson indicated, however, that the Administration's motives in slashing the USAF budget might have been more the result of a desire to balance the budget than

its belief that 120 wings were the most that could be attained.

The Dodge letter, which found its way into Democratic hands, called for the \$5.1 billion reduction in new money for the USAF and overall defense spending of \$43.2 billion for fiscal 1954, almost exactly the revised defense budget now being defended by Wilson.

After summarizing the required reductions, Dodge wrote Wilson, "The accomplishment of these budget objectives will require that you re-examine your programs, their components, and the priorities related to them and reschedule your operations so that the budget expenditures for the military from your agency will be held to a level of about \$43.2 billion in the fiscal year 1954."

In testimony before the Senate Military Appropriations Committee, Wilson and Kyes have been declaring that both adequate defense and fiscal considerations were taken into account while the revised budget was being prepared.

Nevertheless, numerous Democratic senators and representatives, probably to be led by Sen. Stuart Symington (D., Mo.), former Secretary of the Air Force, are planning a floor battle over the reductions.

How much of their opposition is based on a sincere belief that air power is being cut too much, and how much is motivated by politics no one can tell, but it is obvious that some of the Republicans who are planning to try to restore some of the cuts, notably Sen. Milton R. Young (R., N.D.) and possibly Sens. Margaret Chase Smith and Sen. Edward J. Thye (R., Minn.), are

preparing to oppose the Eisenhower defense budget solely on the belief that the reductions involved too much of a risk.

The fight came out into the open when Rep. Samuel W. Yorty (D., Calif.) introduced into the *Congressional Record* "an official statement on the Air Force position" prepared at his request by the AF's legislative liaison office, headed by Maj. Gen. Robert E. L. Eaton.

The statement (see summary above) took sharp issue with many of the allegations made by Wilson and Kyes and dispelled the possibility that the USAF would take the cuts without a word of protest. It was later revealed that the AF's report to Yorty had not been cleared by either Air Force Secretary Harold E. Talbott or by Gen. Nathan F. Twining, incoming USAF Chief of Staff, but neither made any immediate attempt to refute the statement.

As a matter of fact, Congressman Yorty subsequently introduced a letter he had received from Talbott expressing the Air Secretary's disappointment with the budget cuts. In that letter Talbott also expressed the hope that the reductions would not curtail production of combat aircraft and research and development work, but pointed out it was his duty to "accept whatever appropriation" was given him for air power and to spend the money efficiently.

Left Unmentioned

Wilson and Kyes had a case to make, but they never quite succeeded in getting their points across to the Senate appropriations subcommittee and, in the opinion of many observers, they never even mentioned one of the most effective arguments—the fact that USAF spending for aircraft and related procurement would be reduced only from \$7 billion in the Truman budget to \$6.3 billion in the Eisenhower version for fiscal 1954.

What the Secretary of Defense and his deputy did try to convey to the Senate subcommittee was that:

• The threat from Russia has not abated, but the 143-wing program was not a realistic schedule and could not be reached except by substituting virtually useless and obsolete aircraft.

• The Defense Department has all the money it needs to buy aircraft in fiscal 1954. If the new Joint Chiefs of Staff decide to revise the interim 120wing goal upward after their review of the world situation, the required planes can still be ordered with fiscal 1955 funds and no combat planes will be lost in the process.



VANDENBERG: "I kept silent."

• Even the present USAF Chief of Staff, Gen. Hoyt S. Vandenberg, told them that the 143 wings could not be reached in 1954 or 1955.

• Only a small part of the \$5.1 billion would be used in fiscal 1954, even if Congress restored every penny eliminated. Moreover, about \$4 billion of the \$40.2 billion the USAF will have available if the revised budget passes is still unobligated.

• The Air Force is in effect limited to about \$15.1 billion in expenditures for fiscal 1954 because "there is no point in replacing planes that aren't worn out with planes that are no better."

• Gen. Vandenberg, as the representative of the JGS, sat in on the National Security Council meeting which made the decisions on the defense budget and raised no protest.

• Aircraft production schedules have "slipped" continually ever since Korea because aircraft firms were asked to do and tried to do more than they could accomplish in the time allowed under the 143-wing goal.

Vandenberg Speaks

What does Gen. Vandenberg have to say about all this? On his return from a South American tour, the retiring Chief of Staff said he could not comment on the reductions until he had made a detailed study of Wilson's 120-wing program. He declared that he was not a member of the National Security Council and consequently could not interject his views unless he was asked: "No such request was made and . . . I kept silent. At that time I did not know there was to be a reduction in the Air Force appropriation. At that meeting only the total military budget

was decided upon . . . and nothing was said about how the cut was to be distributed among the three services."

Both Gen. Vandenberg and his predecessor, Gen. Carl A. Spaatz (Ret.) are expected to be called as witnesses by the House and Senate appropriations subcommittees.

In their testimony Wilson and Kyes reported USAF strength at about 25,000 aircraft, Navy planes at about 9,900, Marine air strength at three tactical wings, but gave no listing on Army planes and helicopters. (Recent estimates place Soviet air power at about 20,000 aircraft.)

When they were asked whether the U.S. was inferior to Russia in air power, Kyes would say only, "I wouldn't go along with that." They did state, however, that the U.S. is building the longrange bombers and Russia the shortrange fighters and interceptors and the American people can thus be reassured.

That testimony is somewhat at variance with information AMERICAN AVIATION has received from its sources in touch with Russian aeronautical developments. These sources report:

Over 10,000 Planes

• The USSR built between 10,000 and 15,000 planes in 1952, using about half of its capacity. About half the total planes built were MiG-15 jet fighters. By 1956, production will reach about 15,000 planes a year. (The Aircraft Industries Association reported that the U.S. turned out 12,600 aircraft in 1952, about 9000 of them for the military.)

• At least two Soviet wings are equipped with long-range, six-jet TuG-75 intercontinental bombers. Most of the 1100-plane Russian heavy bomber force, however, is made up of Tu-4's, which are an advanced version of the Boeing B-29.

• Production of Tu-4's and Tu-70's (the passenger version used by Aeroflot, the Russian airline) is now between 55 and 75 a month. Most of them are Tu-4's, which are used as long-range bombers (with in-flight refueling) and paratroop transports.

Thus the USAF soon will start canceling orders for certain transports, training planes, and helicopters, as well as for certain combat planes which the Wilson regime considers obsolete. If the Wilson-Kyes testimony is borne out, only a limited number of aviation firms will have their backlogs reduced. If, however, the "official USAF statement" proves prophetic, the cuts for fiscal 1954 will be only the beginning, with the more serious cut-backs coming during the following two years.

Senate Puts Airport Money in CAA Budget

The Senate Appropriations Committee has reported out a CAA budget of \$148,335,000 which is a boost of \$8,385,000 over the House-passed bill that provides \$139,950,000 for the agency. Major action of the Senate group was to write in \$12,500,000 for the Federal-aid airport program. The House had completely eliminated the item in going along with an administration recommendation. Strong pressures were exerted on the Senators, however, to see that new Federal-aid airport monies not be discontinued for fiscal 1954.

The Senate committee, in acceding to these demands and restoring \$12.5 million in airport money, made cuts, on the other hand, in five other major items for a total of \$4,115,000. Hardest hit in the Senate group's recommendation is CAA's establishment of air navigation facilities, which was reduced from \$7 million to \$5 million. Salaries and expenses were cut another million dollars to \$104,500,000.

Senate action on the CAA bill was expected last week and if the committee's recommendations are upheld the bill will have to go to conference. The conferees are faced with the job of ironing out the differences.

RCAF Comet to Visit New York, Washington

A de Havilland Comet, the first jet transport to go into commercial airline service, will visit the United States early this month. The plane will be a Comet IA owned and operated by the Royal Canadian Air Force. The RCAF accepted delivery on the first of three Comets late last month. Plans call for the Comet flying to New York and Washington on its first U. S. visit.

The RCAF Comet flight, which was disclosed at the time of the first Comet delivery, will give many U. S. airlines and manufacturers their first look at the jet transport which has now completed a year of scheduled airline service. Pan American World Airways, which has an order for three Comet III's and options on seven more, is the only U. S. operator to order the British-built Comet.



Radical Changes in C-124 Revealed

The turboprop-powered version of the Douglas C-124 now under construction at Douglas Aircraft Company will be a radically different airplane than the conventional piston-powered aircraft, according to reliable but unofficial sources. The drawing above provides the best available information on the nature of the changes to the original plane.

It will be noted that the low-wing C-124 has been transposed to a highwing plane, with a resulting change in landing gear design. The gear has been removed from the inboard nacelles and installed in fender-like housings on the side of the fuselage. The clam-shell loading doors of the in-service plane have been replaced by a tail-loading door.

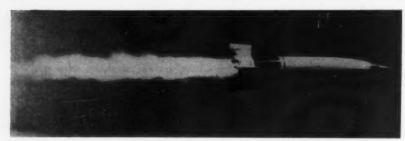
The plane is powered by four Pratt & Whitney T34 engines rated at 5500 horsepower each. The general redesign matches the changes in cargo aircraft design specifications of the military services in recent years.

French Show Reverse Thrust Device





First photos of the French SNECMA's reverse thrust mechanism for jet aircraft engines are shown here. Note (above) when thrust is reversed air is actually drawn into the tailpipe. System has been under flight test for a year in a Goblin-powered Vampire and will stop the plane, without brakes, in less distance than is normally required with brakes.



WILL GERMAN INDUSTRY, which built V-2's . . .



. . . AND FIRST COMBAT JET, the Messerschmitt 262A-1, stage a come-back?

German Aircraft Industry Set to Roll

Manufacturers are busy (unofficially) getting ready for signing of Bonn Treaty, end of restrictions.

By WILLIAM D. PERREAULT

STUTTGART, GERMANY—Preparations for revitalizing the once powerful German aircraft industry, which during the war included 43 large aircraft plants, are moving along at a fast pace, as fast as the specifics of the military occupation law permits.

In some areas the progress undoubtedly violates existing limitations on the build-up of German air power, but this is apparently with the general, if not outspoken, agreement of the allies.

Some recent developments:

• The U. S. Air Force, through its chief of procurement in Germany, has recently made an extensive survey of the German aircraft industry, seeking current data on productive capacity which might be put to work as soon as the Bonn Treaty is signed. Detailed questionnaires were circulated requesting information on available plant space, engineering teams, skilled workers, etc.

• Four of the top German aircraft companies—Dornier, Focke-Wulf, Heinkel, and Messerschmitt—have entered into an agreement to share their facilities, machine tools, and personnel in handling any Allied aircraft contracts that may result when the Treaty is ratified.

• The once-powerful German Aircraft Industry Union (Verband de Deutschen Luftfahrtindustrie) has been reorganized under the name of the "Society for the Furtherance of Aviation." This group will assume its earlier title as soon as the Treaty permits.

• Several foreign firms have been negotiating with individual companies in Germany with a view toward licensing production of trainer and transport aircraft production in Germany.

"As soon as the Treaty permits." This is the most frequently used phrase in German aviation today. Under the terms of the Allied Military Government rule in Germany the aviation industry is limited to pleasure flying of gliders and related production of these small one- and two-seater craft. Germans can

This is the second in a series of stories on aviation developments in Europe gathered and written by William D. Perreault, managing editor of AMERICAN AVIATION, during a three-week tour of European aircraft and engine manufacturing plants and airlines which carried him to London, Paris, Frankfurt, Cologne, Stuttgart, Zurich, Brussels, Amsterdam, and Casablanca.

not contract for transport purchases, build any type of powered aircraft, or establish or operate anything which resembles an aircraft manufacturing plant. Since these activities are forbidden, unions, associations, or other organizations which represent groups of such 'companies" are also out of order.

There is considerable jockeying for position in the aircraft industry as the race to reestablish German aircraft and engine manufacturing gets under way. This is highlighted by the problems within the newly established "Society for the Furtherance of Aviation."

Dr. Friedrich Jastrow, former head of the German Aircraft Industry Union and somewhat remote from the new centers of aviation development, was elected president of the society at the time it was formed. But already Jastrow's leadership has been overthrown, according to high German aircraft industry officials, and at least one successor has been the center of another internal storm within the society. At this date the leader of the re-established industry has yet to be agreed upon.

In his short term as effective head of the new group, Dr. Jastrow said that within three years the German industry could be producing 1000 planes per year and employing 30,000 workers. He looked forward to the production of cargo planes, feeder type transports, and personal planes and to general subcontracting as the role of the industry in its early years.

2½ Million Square Feet

Many of the 43 large wartime aircraft plants were wiped out by bomb damage, converted to other use after the war, or have otherwise been made unavailable. Nonetheless top industry officials claim that more than two and one half million square feet of plant space is immediately available. This is the figure which has been provided U. S. Air Force planners in their investigation of German potential.

It is estimated that this would permit the employment of some 15,000 workers in basic manufacturing and assembly operations, while another 40,000 might be used building accessories and instruments, and in other allied work.

Principal companies growing out of the current struggle are Messerschmitt, Heinkel, Dornier, Focke-Wulf, Siebel, and Junkers. Focke-Wulf is the only company active in aeronautical lines. It is producing high-performance gliders and to a large extent has corrected its financial difficulties. Heinkel, while not active aeronautically, has almost 700 workers in production of truck components and these include former skilled aircraft workers.

Professor Heinkel, who now makes his headquarters in Stuttgart, told AMERICAN AVIATION that the greatest single obstacle to the rebirth of a strong German aircraft industry is the financial havoc brought about by the Allied Military Government's currency reforms in Germany.

Basically, this is the problem: during the last few years of the war, when economic pressures within Germany created considerable trouble for the Reich government, the armed forces started doing business on a paymentafter-delivery basis. The cost of development, tooling up, production, payrolls, and related expenses were borne by the individual contractors.

Since this was not always possible, it being beyond the economic ability of all the aircraft manufacturers during the latter part of the war, the Reich government arranged with banks and groups of banks to loan money to the industry. In some instances there was little or no collateral to ensure that the lenders would get their money back.

Because of this, the scheme later required another move by the Reich, in which it entered into trilateral agreements with the manufacturer and the banking institutions. Under the terms of these agreements the Reich guaranteed the loans to the manufacturers.

When the war ended, individual aircraft companies were in debt to the banks and insurance companies way beyond their means. They owed debts which no normal financial house would have accepted except under this system of guarantees.

Currency Reforms

Currency reforms instituted by the Allied Military Government, the cancellation of all debts of the Reich government, and individual rulings of the German courts all worked to put the German aircraft industry in complete financial chaos. The debts of the Reich government, which owed the companies millions of dollars, were cancelled. The debts of the manufacturers to the banks were ruled still in force, but the Government guarantees had already been wiped out. The industry was and is effectively bankrupt.

Until the Allies make specific provisions to ease these bad debts, the German industry will never be able to assume a productive role. It is a matter which requires the attention of the Allied governments.

Men like Heinkel feel that the biggest thing the United States and its Allies could possibly do to help rebuild this industry is to correct this inequity. It is something which could be done now, prior to the Treaty completion, to remove the financial obstacles which will later prove stumbling blocks to normal recovery.

Officially Germans are not engaging in the design of aircraft, engines, missiles or anything else that flies. This is illegal. But there's an air of activity everywhere. You can't outlaw a designer from thinking. And thinking is designing. And there's some mighty heavy thinking going on all over Germany. But no one admits anything.

Heinkel highlights the real problem with his comment: "Germany is too close to the Iron Curtain to become a prime producer of first line aircraft. If and when the struggle between the East and West becomes a 'hot war,' the European continent will be overrun. We can't seriously ask that the Allies entrust prime production of fighters, bombers, and missiles to an industry in our geographic position."

So early German production will probably be non-strategic. A lot will depend on NATO and the Mutual Sesecurity Agency. But don't underestimate the Germans. They're thinking. They're planning. And when the chips are down they'll be in the forefront of supersonic aircraft and missile designs. It is purely a matter of time. It depends largely on when the Treaty is signed.

NEWS BRIEFS

CAB has denied motions by American and United Air Lines seeking to expand the Flying Tiger-Slick Merger Case to include certificate renewal and enforcement issues. Tentative hearing date: June 15.

Principle of approving use of C-46 aircraft in scheduled passenger operations and of using a fare differential between C-46 and C-54 operations was approved by CAB Examiner Paul N. Pfeiffer in the Pacific Northwest-Alaska Tariff Investigation.

Twenty Bell Model 47 helicopters will be built under license by Japan's Kawasaki Machine Works this year. First flight schedule: October.

Calling for a review and reappraisal of the findings and recommendations of the Finletter Air Power Commission, Aircraft Industries Association president DeWitt C. Ramsey has stated that "substantial reductions in the cost of air power can be made only by national policy decisions."

Reporting the company's first April profit (\$4,776) in its history, Allegheny Airlines president Leslie O. Barnes stated April revenues were up \$32,061 over March, mail revenues down \$24,256 under April, operating expenses down \$1,772 and cost per revenue-mile operated down from 123,19¢ to 119,12¢.

CAA has started flight tests of a new 200,000 candlepower high-intensity airport runway lighting system developed by CAA and Line Material Co. and installed at General Mitchell Field, Milwaukee.

Helicopter passenger service between Brussels, Antwerp and Rotterdam will start on August 1 following agreement reached between Sabena Belgian Airlines and the Netherlands Government. French government has not yet approved the Brussels-Lille route.

An injunction restraining members of the AFL-Air Carrier Mechanics Association from picketing has been granted Braniff Airways. Braniff's maintenance in the troubled area, Dallas, is being handled under contract following discharge of 600 ACMA members

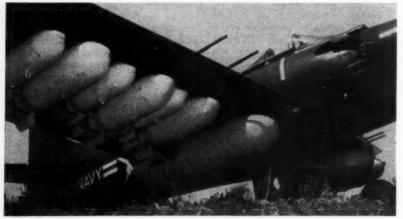
Deliveries of Vickers Viscounts to Air France have moved company plans to start turboprop transport schedules late in May back by about two months.

Establishment of an Air Academy modeled after West Point and Annapolis has the "enthusiastic approval" of President Eisenhower and Defense Secretary Wilson, according to Air Force Secretary Talbott, and Congress will be asked to permit appointment of a commission to recommend a site for the school.

Control towers at 18 airports in the United States and Alaska will be discontinued June 30 as a result of CAA budget cuts unless local communities reimburse CAA for the operating and maintenance costs or operation is taken over directly by the local government. Airports affected: Fargo, N. D.; Harbor Field, Baltimore, Md.; Battle Creek, Mich.; Bismarck, N. D.; Bridgeport, Conn.; Duluth, Minn.; Hartford, Conn.; Helena, Mont.; Juneau, Alaska; King Salmon, Alaska; New Bedford, Mass.; Niagara Falls, N. Y.; St. Joseph, Mo.; Salem, Ore.; Stinson Field, San Antonio, Tex.; Santa Barbara, Calif.; Westfield, Mass.; and Westchester County Airport, White Plains, N. Y. Economy effected: \$600,000 annually.



First flight for the F-86H has been announced by the Air Force. The fifth in the family of Sabres was flown by North American's Joe Lynch, who was quoted as saying that it took off "like it had been kicked in the pants." Air speed boom protrudes from nose.



Record-setting load for single-engine planes, 14,941 pounds, was carried by a Douglas AD-5 Skyraider in a flight at the Naval Air Station, Dallas, Texas. The armament load was greater than the airplane's structural weight.

The Military Scene



Night victories over MIG-15's have been credited to Lockheed F-94 Starfires, which became the first jets to be thus distinguished. Starfires also scored the first night radar kill.



Navy's newest helicopter, the Kaman HOK-1, had its first public performance as the Navy accepted delivery. The HOK-1 is a four-place aircraft with 500 hp take-off rating.

Scramble for Routes Blankets the Nation

Applications for new services would double present domestic mileage, if granted by the CAB.

By WILLIAM V. HENZEY

THE DOMESTIC trunk airline industry, with the jet age and its financial burdens breathing down its neck, is currently involved in a route scramble which would have the Civil Aeronautics Board saddle it with twice as much route mileage as it presently

The scramble involves the three pending route cases recently activated by CAB-the New York-Chicago, Denver Service, and Southwest-Northeast cases. Embraced by applications in these cases are 71,000 new unduplicated route miles. The present trunk-line system covers 75,644 unduplicated miles.

Most of these applications propose routes which partially or wholly duplicate existing authorizations.

Nobody Wants It

There is no doubt that neither the industry nor the CAB wants to see that much new route mileage doled out in the forseeable future, if ever. Nor is there any possibility that all of the mileage covered by the pending applications will be granted.

But there is no escaping the fact that the ball has started to roll in almost uncontrollable fashion toward several large-scale route grants in virtually every section of the country, except the · far northwest.

At this point, the only controlling factor can be the final vote of the five CAB members at the conclusion of the three proceedings. Conceivably, the Board could turn down all proposals under a policy in effect for the past several years under which extensive route changes have been sidetracked in favor of interchanges and mergers.

But the Board itself has now signalled an apparent end to continuing this policy by activating the three sprawling proceedings.

Responsibility can be more accurately traced, however, to these steps: first, the airlines, over the years, filed requests for new routes. Many of these have been pending for seven and eight years. These, as they are involved in the current proceedings, are considered the "basic" proposals.

Then the civil courts ruled in several cases that CAB could not grant a new point or a new route to one carrier if it did not give simultaneous consideration to a pending application of another which embraced substantially the same service proposal.

Thus when CAB, after an internal wrangle among Board members, decided to activate various "basic" applications, the court decision provided further impetus for those with applications not on file to get in the act. For purposes of identification, such applications can be considered "secondary."

There are two reasons given for CAB's decision to go ahead with major route cases at this time. One is that the "basic" applications have reached their place on the Board calendar and, under the law, must be processed. The fact, supporters of this argument contend, that the cases so resulting have mushroomed is incidental to the basic purpose of the Board in granting hearings on all applications filed with it.

The other reason given for the present situation is that some Board members feel certain airlines have monopolistic routes or segments and the time has come to study the addition of competitive services over those routes.

More specifically, veteran Board Member Josh Lee has been openly opposed to past Board decisions which he felt "protected" American Airlines on its route from Dallas to the West Coast. He was thus successful in getting enough support from the Board to weigh various pending applications which might alter this situation.

But the matter is not confined to American's Dallas-West Coast segment.

Everything Involved

Since an application, for example, to duplicate American on the Dallaswest coast leg would necessarily connect the remainder of such an applicant's system with that segment, other areas automatically become involved. Competitors of such an applicant also become involved. And, as in the present situation, practically the entire country and all the domestic trunk-lines are

Significantly, not one of the five carriers proposing the greatest percentage increase in their route mileage in the three cases can be considered a "basic" applicant. The top five and the percentage by which their pending applications would increase their present unduplicated system mileages are:

· Chicago & Southern (prior to Delta merger), 217%; • Eastern, 216%;

• Delta (prior to merger), 133%;

· Continental, 117%; and

• United, 100%.

Northwest with a 24% increase, and Capital and Western with 35% increases, propose the least percentage hikes in the pending cases.

From a mileage standpoint, Eastern, whose applications would add 19,772 unduplicated route miles to its present 9,163, is the leader. Next is United, with 8,440 miles proposed as against 8,412 now operated, and American, with 7,362 proposed as against 10,825.

It is also significant to note that in the seven years following the close of World War II, a period which embraced much uneconomic route expansion, only 15,176 new unduplicated route-miles were awarded to the industry. This totals approximately onefifth of what the industry now has before CAB in the way of new appli-

Eastern Out Ahead

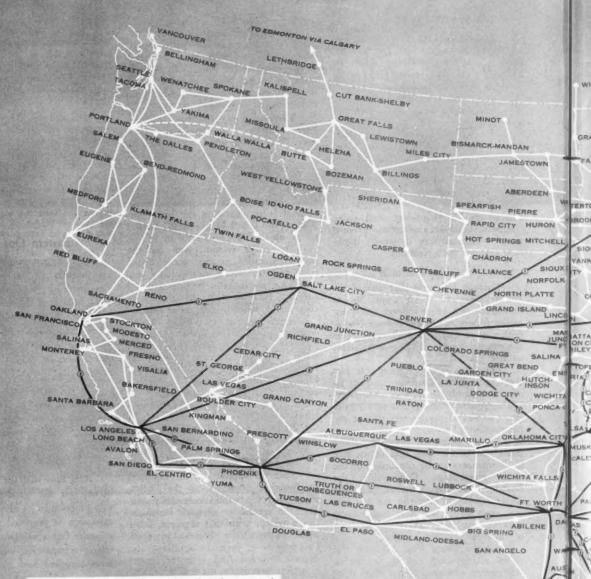
The biggest single gain, discounting mergers, in this seven-year period was made by Eastern, which added 2,261 miles to its 6,902-mile system. Next was United, which added 2,104 miles to its 6,308-mile system; Capital, which added 1,631 miles to its 3,902; and American, which added 1,268 to its 9,557.

On the other hand, TWA, a "basic" applicant in two of the three pending cases, wound up with less route mileage after the seven-year period than when it started: a drop from 7,239 in 1945 to 7,039 in 1953.

It is thus that the industry is embarked on the greatest route expansion program in its history. Much of the expansion is proposed with a negative attitude. But a substantial portion of it envisions expansion into new areas and areas occupied now by other carriers.

The pending cases are too extensive to be solved over night. Estimates are that it will take CAB from two to three years to solve them. That should be roughly about two years before the jet age, according to industry estimates, when over \$1 billion will be needed to meet equipment demands.

For a picture of the route scramble, see map on following pages.



The black lines drawn on the map above show the amount of new service requested by the trunkline carriers in their New York-Chicago, Service-to-Tulsa-Oklahoma City, and Serviceto-Denver applications. No attempt has been made to show duplication, i.e., between New Orleans and Houston, six carriers have included in their application additional service between this pair of points, however, we have only put one line between New Orleans-Houston. There are numerous instances where this occurs. For purposes of simplicity only, we have tried to portray only the requests for new routes and not the number of requests for the same route.

SAN ANTONIO

MINA

LAREDO

TO MEXICO CITY NUEVO

BROWNSVILLE

DOMESTIC AIR ROUTES EXISTING AND APPLIED FOR

NWC

EEN

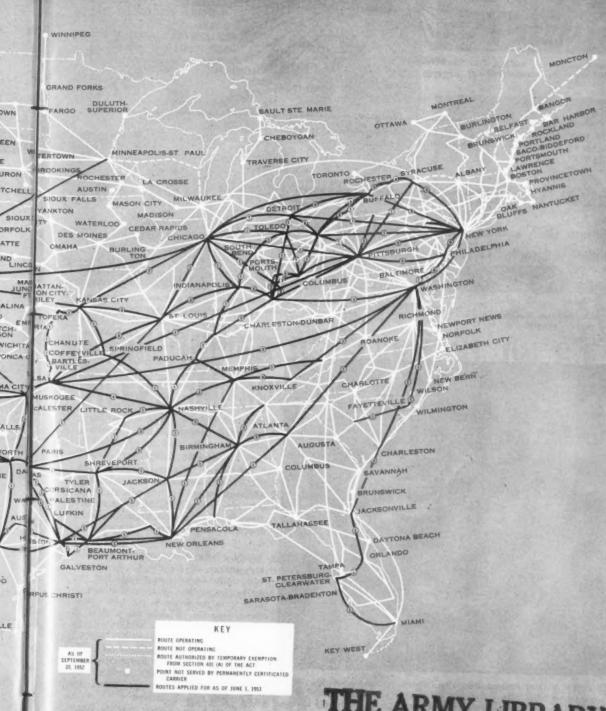
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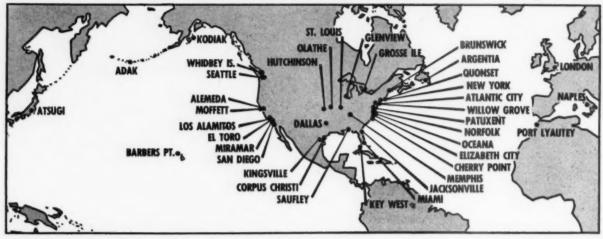
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WORLDWIDE NETWORK of present Navy GCA installations includes 34 locations in U. S. and eight territorial or overseas areas. All are now equipped with AN/MPN-1B GCA equipment in use since 1945, but are slated for modernization.

New GCA Units for Expanding Navy Program

Millionth GCA landing due in August; new equipment will be able to handle five planes at once.

By Joseph S. Murphy

AS THE U. S. Navy approaches its millionth GCA landing, scheduled to occur sometime in August, it is programming a major re-equipment schedule which will modernize all of

its existing ground-controlled-approach installations. The new GCA units will permit more airplanes to be controlled with greater dependability than ever before, and by 1956 will give its air arm a system unequalled in any quarter.

NAVY LOOKS FORWARD to delivery this fall of Bendix manufactured AN/MPN-5 GCA units of type shown here. Now under test, the equipment permits control of five airplanes simultaneously and provides (front to rear) two search positions, a center position which can be used as either a search or precision approach position, and two precision approach positions (first search position not shown above.)

These major developments in 1953 have been revealed in an exclusive report to American Aviation:

• First production delivery will be made this fall of a new AN/MPN-5 mobile GCA unit capable of controlling five airplanes simultaneously (three in final approach and two in the approach pattern). Unit is being built to Navy specifications by Bendix Radio Division, Bendix Aviation Corp., and the prototype is now undergoing tests.

• Fixed GCA installations are in the long-range plan. Units will provide three search scopes and three precision scopes located in a permanent operations building. First unit is now being installed at Patuxent Naval Air Station, and production version will also be built by Bendix.

• Carrier Controlled Approach (CCA) operators are now being trained. Although equipment remains classified, use of personnel from Navy GCA program for the new operation implies a similarity of the shipboard system to that of GCA.

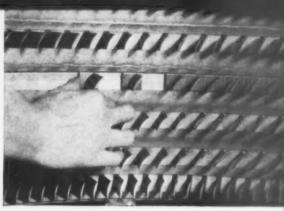
In all the Navy now has 42 GCA installations, 34 in the U. S. proper, and eight abroad (see map). But the further expansion of these facilities is evident in the scope of the new equipment program. It calls for a total of 60 GCA units, 24 of which will be the Bendix-manufactured AN/MPN-5 for locations having the heaviest traffic density; 36 will be Air Force developed AN/CPN-4 equipment produced by Gilfillan Bros. These are slated for use at all other locations.

There is no question that the Navy is sold on GCA. Feeling is that it is



POWERFUL USAF FIGHTER, the North American F-86 has compiled an imposing record. New engine improvements give Sabre Jet greater speed, more range.

J47 "HOT NOSE" is warmed by air bled frem compressor. Retractable screens help eliminate icing problems.



FABRICATED STATOR BLADES are inserted into compressor casing. This development reduces cost with no efficiency-loss.



CONTINUING DEVELOPMENT ON G-E J47 HELPS IMPROVE SABRE JET PERFORMANCE

North American F-86 Flys Faster, Farther

EVER-CHANGING NEEDS of air combat have been met by important refinements and improved performance in the General Electric J47 turbojet— powerplant of the North American F-86 Sabre Jet. A glance at the MIG-alley scoreboard attests to the F-86's past success; but now even better J47 engines are powering improved Sabre Jets in combat against the MIG.

MORE SPEED . . . MORE RANGE were necessary to keep the Sabre Jet's present superiority intact. So G-E engineers designed more efficient compressors, water/ alcohol injection, and a total of 3000 design improvements. Result? Greater thrust, lower specific fuel consumption at higher rpm-with no increase in engine frame size or weight.

CONTINUING IMPROVEMENTS have made the J47 America's number one production turbojet. Yet no G-E engine design is static. Even now, General Electric's vast jet engine facilities are using every means possible to make G-E jets more powerful, more reliable, and more economical than currently-produced engines. Progress is General Electric's most important product. General Electric Co., Schenectady, N. Y.

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Navy experience with GCA has been good. Even with the present equipment, the Bendix manufactured AN/-MPN-1B, the operating factor is estimated at better than 98%, meaning that the amount of time that the equipment is out of commission for any reason, and abnormal weather is the biggest one, is less than two per cent.

One good gauge of the success of any low visibility approach aid can be found in the operating minimums the system will allow. In Navy GCA operation, except where extended runway obstructions will not permit, minimums as low as 100—¼ (100 feet ceiling and ¼ mile visibility) are in general use. By way of comparison, in scheduled airline operations in the U. S. where Instrument Landing Systems (ILS) are the primary approach aid, the lowest minimums in common use are 200 feet-½ mile.

Why New Equipment

If present GCA has been so successful for the Navy, why the new equipment? For one, the present AN/MPN-1B sets have been in continuous service since the program really got started back in 1945 and many technical advances in design which will improve dependability and reduce maintenance have since come to light.

Again, increased operations with higher speed aircraft have upped GCA requirements proportionately, and this older equipment which will permit control of only one airplane at a time on final approach is fast becoming inadequate. Both the AN/MPN-5 and AN/CPN-4 units will increase this capacity.

On this matter of operating factor, Navy records show some impressive figures for the present equipment. Since all units are of dual-channel design. the occasion of complete mechanical failure that would put an installation totally out of commission is rare. But even that of disability due to severe rain, snow, or hail is not frequent. The record shows that, for example, the GCA unit at Jacksonville (Fla.) NAS has operated over 4000 hours with zero time out of operation. At Floyd Bennett Field (N. Y.), where weather conditions are much less favorable for radar, the GCA has accumulated over 8800 hours with only 204 hours out of commission, slightly over two per cent.

One big factor in the Navy's success with GCA lies in its well defined organization. Personnel, once assigned to GCA, are "segregated" from other Navy assignments and are transferred



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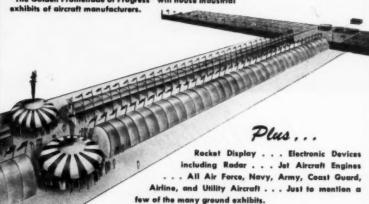
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ON THE GROUND

"The Golden Promenade of Progress" will house Industrial



DETROIT-WAYNE MAJOR AIRPORT JULY 9 THRU 12, 1953 SANCTIONED BY

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and upgraded within the program, usually for a six-year span. Present staff to support the 42 active installations includes more than 800 enlisted men and over 100 officers.

Navy uses the "unit concept," made up of three officers and 19 enlisted men, as the standard for each GCA installation. Officer-in-charge usually ranks as a lieutenant or lieutenant commander, and an approach control officer who supervises the operating personnel and a maintenance officer responsible for the equipment performance; both rank as Feutenants.

The bulk of enlisted men are air controlmen who number fifteen, and rounding out the staff are three electronic technicians for equipment upkeep and a maintenance man for rolling stock and diesels.

On a parallel with adequate staffing is the Navy's emphasis on technical competence through training. All GCA training is centered at the Naval Air Technical Training unit at Olathe, Kansas, where four practice GCA units are in continuous operation controlling different approaches to the airfield simultaneously.

Eight-Week Course

First production deliveries of all new GCA equipment go to Olathe. Here the course for operators lasts eight weeks, most of which is spent in actual "talk down" practice. Classes for electronic technicians range from three to five months, with the newer equipment calling for the longer train-

Preventive maintenance is not overlooked. Daily, weekly, and monthly checks are specified, and an arbitrary 10,000-hour overhaul limit has been set. Another inspection of each unit annually by the Navy Bureau of Ships judges if this overhaul is needed sooner, and the complete overhaul job is handled in special facilities at either the Philadelphia or San Francisco (Mare Is.) navy yards.

Equipment performance becomes a matter of record, with monthly operating and equipment reports by each facility a must. Records of hours operated, out-of-service time, number of landings controlled, parts replacements, all are funneled to the Pentagon office of the Chief of Naval Operations.

Here in the Flight Services Division, an Air Navigation Aids branch under Commander J. L. Nielsen represents the Navy on coordinated civil-military air navigation problems, plans new equipment needs, and keeps a close watch on the Navy's highly successful and soon to be expanded GCA network.

T. E. Braniff: At Home in the World

WENTY-FIVE years ago on June 20 Thomas E. Braniff founded the airline known today as Braniff International Airways. This is a personal appraisal of a man whose deep personal strength and convictions have made him a figure unique not only in aviation but in the world. This is not a story about an airline, nor is it a biographical recitation of a man's achievements, but a personalized evaluation of how a man turned twin

personal tragedies into a new life.

Last September in Geneva, Switzerland, I received an invitation to a reception to be given a few days hence by the World Brotherhood. The hosts were listed as Thomas E. Braniff, president of Braniff International Airways; Albert Plesman, president of KLM Royal Dutch Airlines; and Henri Ziegler, director general of Air France.

Pleased to be invited along with the heads of the world's airlines, and also intrigued about this thing called World Brotherhood and its possible connection with the airline business, I showed up for the reception. After the usual round or two of drinks, the guests were asked to

be seated for a few brief talks.

Mr. Braniff seemed to be the prime host, since he led off. Messrs. Plesman and Ziegler followed. Then came Everett R. Clinchy, president of World Brotherhood, which turns out to be a voluntary non-government association of individuals who envisage the ideal of One World, indivisible, with liberty and justice for all, and without any political positions or legislative pressures. World Brotherhood, we were told, strives for cooperation among all who recognize the moral law. It does not comprise religious doctrines, does not seek any common denominator of faith, does not engage in common worship, and does not infer that one religion is as good as another.

I observed the affair with intense interest. What manner of man, really, is this Tom Braniff, whom I had met first in the Braniff offices when they were in Oklahoma City back in 1935, and who now stands with such calm self-assurance before this group of people, from all parts of the world?

I've done a lot of thinking about Tom Braniff since then. I've met most of the aviation personalities around the world and I've seen many of them under varying circumstances at their home bases and in strange places. I've concluded that of all of the aviation personalities in the world, Thomas E. Braniff has achieved a unique stature. He has achieved that certain poise, that certain understanding of this globe's complexities, that certain dedication to a purpose which brings a vast peace of mind, to the point that he can be called a true citizen of the world. He is at home anywhere.

When I first began hearing about Tom Braniff in 1935 he was considered to be a sharp, shrewd trader, a tough business man, a climber, a man who could be counted on to make money, a lone wolf who was determined to climb far in air transportation regardless of what anybody else thought or did about it. That was his reputation then. He was as tough as they come and

when it comes to the airlines today his competitors are not likely to admit that he's any less tough.

But man's fate is not always of his own determination. Tom Braniff and his devoted wife Bess were to experience a series of personal tragedies. Their only son, Thurman, who had been destined to rise and probably assume the controls of the airline and other Braniff enterprises, was killed in a lightplane accident in Okla-

homa in the mid-Thirties. He was in his

Seven years ago their only daughter, Jeanne, died. In a close Irish family, these were bitter blows.

It was then that the Braniffs sought consolation, compensation and outlet in religion (they are devoted Roman Catholics) but more than that, in a wide variety of human relations activities of which World Brotherhood is one of many. Tom Braniff began traveling, began to become aware of the world about him, began to devote time and money to the betterment of the human race. He became a man of stature at home anywhere on the globe. He's been honored many times here and abroad.

In the airline business Tom Braniff would or could scarcely claim that he is any better as an operator than many of the others who have become great in their own ways-C. R. Smith, Eddie Rickenbacker, W. A. Patterson, C. E. Woolman, Ralph Damon, Juan Trippe, and the others. What produces this appraisal on his 25th anniversary in aviation is his "other life"-the life which he and Bess have found to round out their lives in a devotion to causes which concern, specifically, the dignity of the human individual around this world regardless of race, color, or creed.

It takes a man of deep, intense personal strength to do what Tom Braniff has done and perhaps I can never put this achievement into proper words which truly tell the story. But it has been my fortune to see the Braniffs many times in many places-Lima, Paris, Buenos Aires, Geneva, London, Cairo-and I think I can recognize when I see it the substance and the calm and the poise that comes from character built upon the rocks of personal tragedy.

This "new life" is no hobby, no nominal activity for the sake of headlines, no casual part-time job. Tom Braniff at 69 continues a tough pace of touring the U. S. and the world in his genuine desire to "do something." One day he may be earnestly discussing plans with an Arab leader, next week a Negro leader or a gathering of Jews, next month with Italians and Spaniards.

His wife Bess is an integral part not only of his life but of this "new world." Yet for all of this dovotion to world brotherhood causes, Tom Braniff still watches his airline closely and he still loves to go fishing, hunt, play golf, and go sightseeing when he lands in a new place.

Not many men at 69 (or even at 40) can boast such active and varied interests. Very few Americans have found such deep personal satisfaction in a devotion to causes in the spirit of a real "man of the ... WAYNE W. PARRISH



ON THE COVER T. E. Braniff



PROVING GROUND for crash tests at Indianapolis, where fuel tanks are moved on car at speeds up to 90 mph along 300 foot track and hurled against backstop.

CAA Progress Seen in Crashworthiness

Crash-resistant fuel tanks seen practical and possible; data on tank materials and structures needed.

NO ONE FEATURE of airplane design has attracted more discussion in recent months than that commonly referred to as crashworthiness—design for crash safety. The controversial aftracing cabin seat has been adopted in U. S. military transports to improve the possibility of crash survival. In still another approach, United Air Lines has reduced the passenger density in its coach airplanes, a move also aimed at enhancing the chances of survival.

But the one big problem that these measures are intended to combat, but which they can make no pretense of solving, is that brought on by the crash fire, almost always fed by fuel spillage from tanks ruptured upon impact.

The Civil Aeronautics Administration's Technical Development and Evaluation Center at Indianapolis, Indiana, set the stage recently for the first real step forward in solving this problem when it announced a program which promises to hasten the use of crash-resistant aircraft fuel tanks. Calling together key industry technicians, CAA pointed out these developments:

- Crash resistance in fuel tanks of the bladder-cell type is both possible and practical, CAA announced. Seven years of testing have proven it.
- Next logical step is a program to develop data on various tank materials and structures, data on which manufacturers can base the choice of crashresistant tanks for future aircraft.

On hand at Indianapolis to hear CAA review its past evaluation of fuel tanks and to receive its outline for future testing were top power plant engineers from the aircraft ntanufacturing companies. Represented were Aeronca, Boeing, Chance Vought, Convair, Douglas, Fairchild, Fletcher, Lockheed, North American, Temco, and Martin.

Among the principal cell manufacturers, all from the rubber industry, were Firestone, Goodyear, and U. S. Rubber. Military interest in the crashproof tank brought attendance from both the U. S. Air Force and the Navy Bureau of Aeronautics.

During the two-day session CAA experts from TDEC, headed by R. J. Schoers, who spearheaded the tank research, spelled out these plans:

• Laboratory tests: CAA will come up with a strength and elongation rating for each type of cell material submitted by the manufacturers. A compressed air gun rig coupled with a high speed camera will make up the test equipment, and during an actual test the pressure build-up rate in the gun will be raised or lowered until the cell material fixed across the face of the gun can be made to burst in an inflation interval of 1/20 of a second. The indicated pressure being applied and the elongation attained at the bursting point, both photographed, will provide the index for CAA's rating.

300-Foot Track

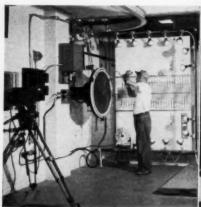
• Crash tests: For correlation with the laboratory data, each type of cell material will be fitted into simulated aircraft compartments of light, medium, and heavy structure. Following closely the pattern of previous tests at Indianapolis, the tanks will be propelled at varying speeds along a 300-foot track and hurled against a sandbag-faced concrete wall, with each speed signifying a given crash load.

Speeds will be increased in a particular tank test until the material and structure fail to survive the test intact, at which point the crash rating of the combination will be set.

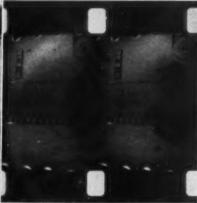
This is how the test data will be used, assuming an airplane manufacturer wants to determine what material of the lightest weight will give crash resistance for a particular tank location. No single crash-load factor would apply throughout the airplane, i.e. in choosing a material for a wing-tip tank, its crash rating would not have to exceed that of the structure holding the tip to the wing.

If located in fuselage or wing root areas, greater crash resistance would be required so that the tank would not disintegrate in a crash sooner than the structure which holds it.

Immediate industry reaction to the plan appears to be very favorable, CAA reports, with no dissenting opinions offered at the time of its presentation,



AIR GUN RIG tests sample tank material . . .



. . . HIGH SPEED CAMERA records time and elongation.





"Scenic Santiago, Chile, is a fairy-tale city. Here we're standing in front of the marvelous Carrera Hotel. Our rooms in this hotel looked out at a skyline of snow-capped peaks."

"Buenos Aires came as a com-

plete surprise. It is big and beautiful, the third largest city

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HIGHLIGHTS IN Jet Engineering

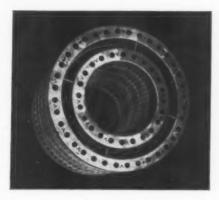
Combustion section life increased over ten-fold



The combustion section of jet engines was given an unprecedented lease on service life with the introduction of the "step wall" liner. The unique design of this combustion chamber liner has proved itself beyond question in the unequaled combat record of the Westinghouse J34 engine. By eliminating severe hot spots and their heavy engine damages, the liner answered one of the most critical of all service-life problems.

The actual design features of the "step wall" liner, a Westinghouse patent, stand out at a glance. In place of the usual cylindrical sheet metal construction, telescopic circular sections have been fitted together. This gives the liner a stepped contour, instead of a flat surface, allowing a continuous blanket of relatively cool air to pass over its surface. The result: protection from the ravages of temperatures over 3000°F.

While the J34 was setting its unparalleled combat records in Korea, Westinghouse engineers were designing another new jet engine, using the "step wall" liner—the J40. Already severe altitude and wind-tunnel tests have been made. Again new records have been set . . . over 700 hours without a major component change. And again Westinghouse engineers have new designs on their drawing boards . . . new plans to keep advancing the jet engineering of today, with an eye to faster, more economical air transportation tomorrow. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.



"Step Wall" Liner—Full view of combustion chamber liner shows stepped contour design on both inside and outside sections.

Westinghouse



formal industry endorsement has been received. TDEC has put the program into motion.

With the timetable for its completion remaining an unknown (some estimates range from a year to 18 months) one big industry question centers around regulations. The answer is that the Civil Aeronautics Board, also represented at the session, has no immediate plan to order crash resistant tanks in future aircraft. The thinking in CAB, as told to AMERICAN AVIATION, is to let the program develop the data and to give industry the opportunity to use it. Awaiting these results, no regulations will be enacted.

Health Service Speeds Clearances at Idlewild

New U.S. Public Health Service procedures at New York International Airport are speeding the clearance of incoming passengers, particularly U.S. citizens.

A PHS officer now boards arriving planes, ascertains from the captain that there has been no illness aboard, and views all passengers. He then releases documents to be forwarded to Customs and Immigration, and after he leaves the plane the baggage may be removed to Customs.

Passengers proceed to a PHS "hold" room, where an airline representative presents U.S. citizens for clearance first. If flights have cleared quarantine at other U.S. ports, citizens are allowed to proceed directly to Immigration. Flights from Bermuda, Havana, and Nassau are not boarded; passengers proceed directly to hold rooms, where citizens are processed first.

Under old procedures, a PHS officer did not board the plane, and passengers waited in the hold room until the aircraft's captain arrived and declared there was no illness aboard. Baggage and documents were then released. Unless the airline noted on the PHS manifest which passengers were citizens, these citizens were mixed with aliens for clearance, slowing them down considerably.

ICAO's Annex 9 had eliminated the need for listing citizenship, passport number, etc., in manifests in an effort to simplify paperwork connected with international travel. Past PHS procedure had drawn considerable criticism from airlines (AMERICAN AVIATION, November 10, 1952).

The new plan makes it possible for carriers to give better service to their customers throughout the entire clearance routine, according to one airline official. Baggage unloading should be speeded by six to 12 minutes, passengers will be processed through PHS in a steady flow, and Immigration and Customs documents will be expedited.

NEWS BRIEFS

Development of a new very-longrange version of the Super Constellation has been informally acknowledged by Lockheed Aircraft Corp. Best indications are the new model will be a Wright Turbo-Compound powered version of the 150,000 pound gross weight, turboprop-powered L-1249 under development for the Navy.

Introduction of the "weapons systems management" concept has been marked by the U. S. Air Force's handling of the present contract with Consolidated Vultee for the supersonic XB-58 bomber, according to A. C. Esenwein, manager of Convair's Ft. Worth plant. Convair holds centralized responsibility for coordiating and managing performance of the entire project including electronics, armament and bombing equipment. Result: fewer compromises, greater production, lower costs.

Complete loss of power of the right engine has been cited by CAB as the probable cause of the crash of a Unit Export Co. Inc. C-46 near Prescot, Arizona, on August 31, 1952. Power failure resulted from inadvertent closing of the emergency fuel shut-off valves by fouling of the actuating cables by the right gear tire.

Re-elected president of the Aviation Writers Association: Ralph Platt of the Cleveland News. Other officers: LeRoy Whitman, Army, Navy, Air Force Journal, first vice president; Dave Wallin, St. Louis, Mo., second v.p.; Tony Page, Austin, Tex., third v.p.; Niels C. Beck, Parks College, East St. Louis, secretary; Leslie V. Spencer, New York City, treasurer; and George McLaughlin, Jamaica, N. Y., historian.

There were 104 fatal and non-fatal air carrier accidents in the United States during 1952, down from 116 last year, and including 13 fatal accidents taking the lives of 228 people, passengers and crew members, the CAB reported.

Sales of \$158,286,000 for the first quarter of 1953, up 77% over 1952's first quarter, was reported by Lockheed Aircraft Corp. Net profit, after provision of \$7,420,000 for taxes, \$3,501,000. Corporation backlog: \$1,484,847,000, up 44%.

Pioneer Air Lines is offering part of its fleet of nine Martin 2-0-2's for sale at \$485,000 each, directing its sales efforts at large corporations. PAL paid \$4,200,000 for the nine planes, reported that it spent \$75,000 per plane in modernization and re-equipping. PAL is offering maintenance and overhaul services, pilot training, and related services with the sale.

Japan's Ministry of Transportation has named a committee to plan the organization of an airline. Committee is headed by Aiichiro Fujiyama, chairman of the board of the present JAL.

MATS Completes Fifth Year

THE Military Air Transport Service observed its fifth year of operation on June 1. The unification of the Air Transport Command and the Naval Air Transport Service in 1948 marked the first time in U.S. military history that units of two separate services were integrated into a single permanent organization.

Today, MATS employs 100,000 Air Force, Navy, and civilian personnel under the command of Lt. Gen. Joseph Smith and vice commander Rear Admiral Hugh H. Goodwin. MATS operates over 115,000 miles of global air routes, airlifting cargo, military passengers, and medical patients.

MATS technical services—Airways and Air Communications, Air Weather, Air Rescue, and Flight Services—also have been operating for five years.

MATS record for its five-years of operation is estimated in the following

operational statistics:

June 1, 1948 to June 1, 1953

1,650,000 *Passengers airlifted 240,000 Medical patients airlifted 1,890,000 Total: passengers & patients airlifted 316,000 *Tons cargo & mail airlifted

526,000 Total tons (includes tons of passengers, patients, cargo, and mail airlifted)

3.200,000,000 Passenger-miles flown 650,000,000 Patient-miles flown 3.850,000,000 Total passenger & patientmiles flown

418,000 Patient movements worldwide

1,000,000,000 Total ton-miles (includes passenger and patient tonmiles, and cargo & mail ton-miles flown)

Since August 1952 includes only traffic moved world-wide in overseas areas outside U.S.



A Stockroom is no place to Breed "TURKEYS"!

Here's how American Airfreight can prevent their accumulation

Today more and more retailers are learning that they are able to cut down considerably on the depth of their stock by relying on airfreight for delivery of reorders. Thus the twin danger of being caught either with a surplus of "turkeys" or a shortage of "runners" is eliminated from the retail business.

You, too, will find that one of airfreight's most important advantages is its overnight replenishment cycle that permits you to stock just for today's needs—and meet tomorrow's as they come. Furthermore, airfreight helps you speed up turnover, avoid merchandise depreciation and reduce costly warehousing space. Because all of these benefits are so farreaching, the initial decision to utilize airfreight is a management responsibility. Wire us collect and we'll have an American Airlines representative in your office promptly to show you facts and figures on this modern distribution method. American Airlines, Cargo Sales Division, 100 Park Ave., New York 17, N. Y.



AMERICAN AIRLINES INC.

America's Leading Airline



FIRST FLIGHT gave DC-7 a chance to show off speed, quietness.

Three DC-7's Speed Certification Testing

Novel technique tried; scheduled non-stop service coast-to-coast seen likely with new aircraft.

By FRED S. HUNTER

DOUGLAS Aircraft Co. painted DC-7 in huge letters on the vertical fin of the No. 1 ship. It might be a subtle hint to airline buyers to follow suit for identification purposes. Might be a good idea, too.

Parked on an airport ramp, the DC-7's four-bladed props will distinguish it. Looking down from above, the new carburetor air scoops present a mark of differentiation. On take-off and climb, it won't be so noisy. Otherwise the DC-7's outward appearance so closely resembles the DC-6B it would take a Jake Moxness or a Jim Clyne to spot the difference, and chances are even these experts would look first at the CAA serial numbers.

Test flying on the DC-7 enters its fourth week this week, and Donald W. Douglas, Jr., who is director of testing for the Santa Monica manufacturer, is pushing forward on the program at an accelerated pace. A third airplane is ready to join the project and all three will be used in the CAA certification flight tests now starting.

John F. Martin, chief test pilot, and Bert A. Foulds, assistant chief pilot, who were at the controls on the initial flight, are doing a large share of the flying and are to remain on the project to its conclusion. Ten other Douglas engineering test pilots will lend a hand in attaining CAA certification by early

Meanwhile, with DC-7's coming down the assembly line intermingled with DC-6B's, Douglas is preparing to be able to deliver a squawk-free airplane to American Airlines in advance of the legal ticket, with an X-type license, for crew familiarization and training; this will enable the carrier to expedite inauguration of service with the new equipment.

Non-Stop

There have been no admissions of any such plans either by AA or by United Air Lines, but evidence indicates the advent of the DC-7 more than likely will witness the introduction of nonstop, coast-to-coast service in this country. Long-range configuration of the DC-7 fits such a service perfectly.

All orders for the DC-7 so far, significantly, have been placed by domestic carriers. The two in addition to AA and UAL are Delta-C & S Air Lines and National Airlines. Moreover they all are

for the luxury type.

Over a 2,000-mile range the DC-7 will average 55 mph faster than the DC-6B. For that speed advantage the airlines pay a premium of more than \$500,000 in the price of the plane over the DC-6B. Elimination of intermediate stops to make special hot-shot transcontinental schedules still faster appears an entirely logical development.

It also happens that fuel capacity of AA's first seven airplanes will be 5,512 gallons, and their maximum gross takeoff weight will be 122,200 pounds. On the next 18 planes, the additional fuel cells come out and the maximum gross drops to 116,800 pounds. Since these can be operated one-stop coast-to-coast satisfactorily, a natural deduction is that AA must have plans for longer-range operation with the 5,512-gallon jobs. All 25 of UAL's DC-7's will have the full tanks and gross at 122,200.

When it first put the DC-7 on paper, Douglas had mainly in mind a faster transport which the airlines could profitably use on their A-Number-One luxury schedules until such time as the manufacturer would be prepared to talk jet. Changing events in air transportation, however, are altering the view-

Douglas hasn't yet received an order for a high-density configuration, but if any carrier wants to go coach with the DC-7 it has a 96-passenger package ready with weights to match.

New weights involve an increase in zero fuel weight, where it counts in payload, by nearly 6000 pounds, thus providing more than ample margin for a high-density load of 96 passengers plus baggage. It also will make the airplane more attractive for operation at longer (overseas) ranges.

Meanwhile, weight progress will be made on the DC-7's currently on the assembly lines. The first seven AA

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planes come out this way: Maximum gross take-off weight: 122,200 pounds; maximum gross landing weight, 95,000 pounds; zero fuel weight, 88,250 pounds.

The next 14 planes read: Maximum gross take-off weight, 116,200 pounds; landing weight, 95,000 pounds; zero fuel weight, 88,350 pounds.

The last four read like this: Maximum gross landing weight, 116,200 pounds; landing weight, 97,000 pounds; zero fuel weight, 90,250 pounds.

All 25 UAL planes are at 122,200 pounds gross take-off, 97,000 pounds landing weight, and 90,250 pounds zero fuel weight.

The speed of the DC-7, together with its operating economies, is advanced as one of the reasons why the U.S. domestic airlines won't be in too great a hurry to sign any dotted lines for jet transports. A rough comparison between DC-7 performance and Comet performance on a Los Angeles-New York schedule (2541 miles) makes interesting reading and goes like this:

	Comet I	DC-7
Take-off gross (lbs.)	110,000	122,200
Payload (lbs.)	7,000	17,795
Block speed (mph)	385	331
Block time (hours)	6.6	7.68
Fuel consumption (lbs.	27,650	24,500

The Comet II and the Comet III will bring faster speeds and higher payloads, but even the Comet III, based on such estimates as are available, would reduce the block time of a Los Angeles-New York trip over the DC-7 by less than two hours.

Living-Room Comfort

Douglas is going all-out for living room comfort in the DC-7, with its five-ton Freon refrigeration system, which is optional equipment for the airplane. It weighs more than 500 pounds, but it is designed so that any combination of major components can be removed during cool-weather months and reinstated for hot weather operation.

Compressor, compressor motor, expansion valve, and evaporator are located under the cabin floor immediately aft of the cabin heater compartment. Receiver, condensor, condensor air inlet, air exit, and ground blower are installed in the right-hand wing-fuselage inlet. The semi-flush condensor air scoop and the controllable exit exhaust valve are located in the bottom surface of the fillet aft of the rear wing spar.

To provide space for the Freon equipment, the landing flare chutes have been relocated back into the tail section of the airplane, and the tank for windshield and carburetor alcohol has been redesigned and relocated, although in the same fillet.

Douglas' decision to use titanium

Data on the Douglas DC-7

SPECIFICATIONS

Crew:	5 Overseas Plus cabin attendants	
Capacity:	Passengers-64 plus five lounge seats, in de luxe configuration. Up	to
	95 passengers in coach version.	

Cargo—707 cu. ft. and 13,660 lbs.

(Alternate) 1,145 cu. ft. and 19,400 lbs.

Dimensions:	Span	117' 6"
	Length overall	108' 11"
	Height overall	28' 7"

Area (sq. ft.): Wing (including aileron) 1463 sq. ft.

Landing Gear: Type Fully retractable tricycle incorporating two sets of dual-type main wheels and a steerable-type nose wheel.

Tread of main wheels 24' 8"
Wheel base (fore and aft) 36' 2"

Power Plant: Make of engine Wright R-3350 compound

Take-off power 3250 bhp each
Propeller Hamilton Standard 4-bladed high activity; 13' 6" diameter.

Weights: Maximum take-off (domestic) 122,200 lbs.

Structural design landing 97,000 lbs.

Structural design landing 97,000 lbs.

Zero fuel weight 90,250 lbs.

Payload 20,000 lbs.

C. G. Limits: Forward — 8.0% Aft — 33.5%

PERFORMANCE

Level flight speed		Gros	s Weights	
With max, continuous power	(lbs.)	95,000	105,000	
High blower critical alt.	(mph.)	410 22,200	410 22,100	
With max, cruising power High blower critical alt.	(mph)	370 24,500	358 24,200	
Stalling speed				
Landing configuration S.L.	(mph)	99	*****	
Rate of climb and ceiling with maximum continuous power	(1bs.)	95,000	105,000	122,200
4-engine max. R/C at S.L.	(fpm)	1,810	1,540	1,145
	(fpm)	1.303	800	460
4-engine service ceiling	(ft.)	28,200	26,700	23,900
3-engine service ceiling	(ft.)	24,100	22,300	18,900
Take-off at T/O power	(1bs.)	95,000	105,000	122,200
CAA field length at S.L.	(ft.)	3,375	4,315	6,380
CAA field length at 5,000 ft.	(ft.)	4.260	5,500	

^{*} Maximum permissible T/O weight with wing flap setting 20° at 5,000 ft., with 3,250 bhp/engine is 117,700 lbs. The corresponding CAA T/O field length is 7,340 ft.

CAA field length at S.L. (ft.) 5.510 CAA field length at 5.000 ft. (ft.) 6.290

Range

Absolute	range	at	15,000	ft.	with	5,512	gallons	of	fuel		4,420 n	niles
Absolute	range	at	23,500	ft.	with	5,512	gallons	of	fuel	*********	3,900 m	niles

in the DC-7 nacelles is paying off even better than anticipated. The firewall and approximately 90% of the primary structural nacelle skins aft of the firewall are of the new high-strength, high-temperature metal, and it represents the first time the material has been used in a commercial aircraft other than in token quantities.

Two considerations entered into the decision. One was the desire to improve the strength vs. temperature characteristics of the engine nacelles. The other

was to save weight.

Douglas estimated a weight saving of 200 pounds. Actual saving is turning out to be between 280 and 300 pounds. This is equivalent to 1½ passengers for the entire life of the airplane, a revenue factor transforming the \$20 per pound cost of the titanium sheet into a bargain for the airlines.

Titanium Coming

J. R. McGowen, chief project engineer, expects titanium eventually to replace stainless steel and other alloy steels in many other applications in coming commercial aircraft.

McGowen and the DC-7 design group, however, used the heavier stainless steel in building mass into the structure of the fuselage at the propeller line to reduce propeller noise in the cabin. Douglas has taken additional measures to quiet the DC-7 cabin even in the face of increasing the craft's empty weight.

Douglas added 700 pounds in soundproofing the DC-6B and it has added another 500 pounds in beefing up the fuselage structure of the DC-7 to absorb the low frequency sounds and increasing the use of fibreglas to deaden the high frequency sounds. Still another measure of blocking sound energy out of the cabin is the use of triple-paned windows.

By necessity, Douglas makes a noticeable departure from an old rule by including inboard exhaust stacks on the DC-7. Douglas never has liked inboard stacks, not only because of noise, but because of the red glow at night.

But in the power recovery system of the Wright Turbo-Compound engine each turbine is driven by the exhaust gas from six cylinders "blowing down" through three separate siamesed exhaust pipes. This puts three exhaust hoods at approximately seven o'clock, 11 o'clock, and 2:30 o'clock as the engine fits into the nacelle.

Since short pipes help to maintain exhaust system pressures at low level, Douglas had no alternative but to have one exhaust each on the No. One and No. Two engines on the inboard side and two each on the No. Three and No. Four engines.

Diameter of the Wright engine is approximately seven inches greater than that of P & W's R-2800, but Douglas has held the basic diameter of the DC-7 nacelle to that of the DC-6. This has necessitated some bulges to cover the landing gear. Accessories in back of the engine also are reasonably tight, but airline maintenance people who have checked it say the Douglas engineers have done a better than usual job of making allowances for accessibility and simpler maintenance.

Basic design features of the DC-6B outboard nacelle were retained for the DC-7, but the inboard's are new, using transverse rather than the conventional longitudinal type of stiffening. Criterion of this design is consideration of the entire nacelle as a shear beam rather than as a bending beam. Only the four new engine mount longerons are retained as longitudinal members.

The inboard nacelle has been lofted four inches to make room for possible use of the next larger size of main gear tire. Meanwhile, the DC-7 will appear with the same 15.50 x 20 tire first used on the DC-4 and carried over to the DC-6.

Dual Disk Brakes

The Goodyear wheels and brakes feature a dual disc brake as compared to the single disc on the DC-6. After starting out with a brake of 4,836,000 foot-pound load, Goodyear went up to 6,200,000 foot-pounds on the DC-6; now with the new dual disc installation on the DC-7 the load goes up to 8,100,000 foot-pounds.

The DC-6B type of oil transfer system has been replaced in the DC-7 by making the nacelle oil tanks large enough to hold all the oil required by the 5,512 gallons of wing fuel. The DC-6B transfer system, weighing approximately 140 pounds and holding 176 pounds of fluid, is located in the wing-fuselage fillet and comes within the design zero fuel weight. The DC-7 nacelle tanks, having 184-gallon capacity, cost no more in empty weight and permit oil weight to be added above the zero fuel weight. This nets 176 pounds of payload.

The DC-7 is 40 inches longer than the DC-6B. Since the DC-6B is 60 inches longer than the DC-6 is 80 inches longer than the DC-4, the stretch-out of the Douglas transport design has reached a total of 180 inches, or 15 feet. Douglas' use of a fuselage with a constant cross section at the center has made it readily adaptable to these successive increases in length and each step has improved the streamlining.

Except for structural changes neces-

sitated by higher performance levels, the DC-6 wing remains on the DC-7. Tail size also is the same, this being sufficient to balance the plane from the standpoint of center of gravity and to provide aerodynamic tail power required by the higher operating weights, speeds, and engine powers.

An additional trim tab in the aileron system for better lateral trim is cable driven. The rudder control system has been redesigned to provide lower pilot forces. The rudder tab is longer.

Of interest to pilots is the reduction in aileron wheel throw to $\pm 90^{\circ}$ with no increase in pilot force.

Almost the only cockpit change in the DC-7 is the addition of a control handle on the pilot's pedestal for speed brake operation of the main gear. In tackling the problem of reducing speed, Douglas has strengthened the main landing gear and its struts, link attachments, doors, etc. to permit extension at air speeds up to 300 mph indicated (about 410 mph at 20,000 feet). Lowering the main gear, which drops free without hydraulic pressure through operation of the control handle, will almost double the drag of the airplane and permit faster, steeper descents. This type of operation nets better block speeds and greater passenger comfort.

A new approach to the design of a non-icing air induction scoop is utilized in the DC-7's alternate carburetor air scoop. In this design, Douglas has developed an air intake inlet contour which deflects water and ice particles past the aft lip of the scoop, while the air itself is drawn into the the intake throat. A ram recovery appreciably greater than that of the present non-ram scoop designs will make the use of pre-heat necessary only in the most severe icing conditions, Douglas reports.

One other point—the pitot tube has been lofted on the nose of the DC-7 so that a radar scanner can be put in the nose.

NEWS BRIEFS

The Flying Tiger Line's operating profit before taxes and depreciation for six months ended December 31, 1952, was \$1,643,635 against \$1,498,731 in same 1951 period, but increased operating and re-equipment costs decreased net profit from \$732,606 in 1951 period to \$579,611 last year. Gross revenue was \$12,527,690, up from \$10,546,348. FTL estimates gross revenue will reach \$25 million by June 30, end of its fiscal year, against last year's \$21,837,496.



CUTAWAY VIEW of Swedish-built Stal Dovern engine which may be licensed to U. S. or other foreign engine manufacturers. Dovern is rated at 7260 pounds thrust.

Swedes May License Jet Engine Abroad

No security restrictions surround the Stal Dovern; three models of engine are well along in development.

THE SWEDISH Air Force's decision to use the Rolls-Royce Avon engine in the SAAB A 32 Lansen all-weather fighter has cut back production plans for the Stal Dovern jet engine and firmed up the company's decision to try to license this engine abroad.

Virtually no information regarding the axial flow Dovern engine has been available until now, although 10 of the engines have been built and more than 3,000 hours operating time compiled on prototypes, including 120 hours test flying in a Lancaster bomber used as a test bed for the Swedish-built Doverns.

Rated at 7260 pounds static thrust, the Stal Dovern is a joint development of the Stal Company of Finspong and Svenska Flygmotor of Trollhattan. The design met the Air Force's specification for the SAAB A 32 attack fighter and royalties were paid on initial deliveries prior to the decision to switch to the Rolls-Royce Avon, built under license by Svenska Flygmotor, in the production planes.

Also affected by the cutback was the two-spool Stal design known as the Stal Glan and rated at over 10,000 pounds thrust. Some parts of this engine were in early stages of construction when the contract was cancelled.

The engine, which Stal is trying to interest other countries in producing under license, is available in three models: the Dovern II A, rated at 7260 pounds static thrust; the II B, the same engine plus anti-icing provisions; and the II C, the latter engine equipped with afterburner for a 30% increase in thrust. Development work on all three models is continuing despite the Swedish Air Force action in anticipa-

tion of foreign sales.

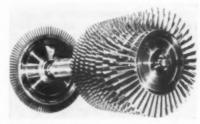
Basic data on the Dovern II A and

	ngth																		
Diamete	r.		,	8		×	*	×	*	*	*	*	8	*	. 7		12	.7'	10
Length											,		×		. ,	1	48	.5	10
Diameter. 42.7" Length	i.,																		
Fuel con	nsu	m	11	ot	i	01	n												

(norm.) 0.92 lbs./lb. thrust/hr. Oil consumption

dry ...7260 lbs./7200 rpm/S. L. Static thrust, cont.,

dry ..5720 lbs./6800 rpm./S. L.



DOVERN'S nine-stage axial flow compressor is shown here.



DESIGN REFINEMENTS to Dovern's burners (left to right) show successive developments to present configuration.

The Dovern uses a nine-stage axial flow compressor, nine combustion chambers, and a single axial flow turbine. A magnesium alloy annular air intake with one row of steel inlet guide vanes is used.

On the II B and II C hollow struts and inlet guide vanes, as well as the nose bullet, are supplied with hot air tapped from the last stage of the compressor. Pressure ratio of the steel disked and steel bladed compressor is 5.2; mass air flow is 121 pounds per second.

Combustion chambers are made of Nimonic alloy and use one duplex fuel burner injecting downstream in each chamber. The single-stage, axial-flow turbine uses a rotor disk of Jessop H 46 alloy with inserted solid blades of Nimonic 80A. The exhaust is of the fixed area type.

The fuel system is of the single manifold type with Lucas equipment, including the GC-200 multi-plunger variable stroke fuel pumps, SCH 2062 fuel control with electrically actuated high pressure shut-off valve, and SCH 2189 air fuel ratio control. The lubrication system is of the dry sump type.

Starting is accomplished by a Rotax 112-volt, direct current starter or by a two-shot cartridge starter. Rotax shielded ignition of the high energy type is used with Lodge igniter plugs.

A 70-horsepower drive for remotemounted airframe accessories is provided.

NEWS BRIEFS

France's Boisavia company is building the prototype of a new all-metal light transport known as the B-260 Anjou. Powered by two de Havilland Gipsy Majors, it will cruise at 143 mph and carry up to five occupants.

A new Delta fighter is being built by the English Electric Company. It should be ready for flight testing by the end of the year.

Bench tests of the **Turbomeca Ossau** 1,765-pound thrust turbojet will start soon. Turbomeca has developed an afterburner device which boosts the output of the Marbore from 880 to 1,325 pounds.

The Vickers-Supermarine 508, the first twin-jet fighter designed for the Royal Navy, has completed its deck landing trials. Vickers has received a large order for a new naval fighter developed from the 508.

Wrong Yardstick Distorts Profit Figures

Whether last year's rate of return was five per cent or 10% depends on which system you use.

By ERIC BRAMLEY

A DISTORTED and inflated picture of the trunk airlines' financial health has appeared recently in studies prepared by the Civil Aeronautics Board's bureau of air operations, industry officials say. And they're concerned over what kind of a yardstick the Board is going to use from now on to measure the progress of air transportation.

These studies claim that the trunklines have been making a high rate of return on investment, and thus make it appear that the carriers' stockholders are receiving ample returns on the money they have invested. Similar claims have been made in recent speeches by CAB Member Joseph Adams.

For example, the airlines say their rate of return last year was 5.2%. However this becomes 10.2% when calculated according to the bureau of air operations' system.

The BAO's rates of return are based on a method of calculation very rarely used by a regulatory agency in setting rates, according to persons who for years have studied transportation and public utility regulation. It always results in higher returns than computations based on other practices, they say.

The BAO studies show rate of return on average invested capital, consisting of long-term debt plus net worth (capital stock and surplus). All of these figures are found on the right-hand, or liability and net worth, side of the balance sheet. Regulatory agencies (including CAB) have always, in rate cases, interpreted investment as actual assets dedicated to the public service, depreciated and often modified to reflect prudent investment. These figures are on the left-hand, or asset, side of the ledger.

The new BAO method has never been used by CAB in mail rate cases. Industry observers are wondering:

- Why the Board now has two yardsticks—one for rate cases, the other for BAO studies;
- If CAB is contemplating a complete switch to the latter method.

Use of the liability side always results in higher rates of return. Following is a comparison of the two methods as applied to the domestic trunklines:

	Based on Long-Term Debt Plus Net Worth	Net Assets
1938	(5.33)*	(4.59)
1939	8.43	8.01
1940	8.54	6.50
1941	7.38	4.83
1942	16.07	11.56
1943	13.69	7.92
1944	14.63	9.31
1945	9.99	8.52
1946	(4.38)	(1.45)
1947	(6.36)	(4.66)
1949	0.47	(1.03)
1949	6.61	2.75
1950	10.97	6.64
1951	12.71	7.36
1952	10.2	5.22

NOTE: 1952 is an estimate. In all computations in both columns, carriers' total investments are used—there is no separation of domestic and international.

* Parentheses indicate deficits.

Here's why the experts say the liability side of the balance sheet is rarely used to measure profits for rate-making purposes:

- Results are misleading. If an airline had heavy losses which wiped out its surplus, the rate base would be so reduced that its first profits after this period would appear to be very large. This might lead to a rate reduction when the carrier could least stand it. On the other hand, an airline with a long period of profits largely retained in the company would have such a large rate base that its rate of return would be relatively small. This would appear to show declining returns when the airline was actually in excellent shape.
- Property actually used in public service can't be determined on the liability side, as it can on the asset side. For example, stock on the liability side might represent an investment not dedicated to public use, such as an airline owning a hotel, or other facility. This can't be determined from looking at a lump sum figure representing stock. Such a facility could easily be found in a break-down of the assets.
- Long-term debt plus net worth can't be evaluated. Stock may reflect overcapitalization or undercapitalization. Securities and debt bear no particular relationship to the assets of the com-

pany, except at the time of starting business.

Airline economists state that a financial house, examining an airline to see if it's a good investment, will look at the liability side to determine dividend payments, debt, surplus, etc. However, for rate-making purposes, use of the asset side is the proper way to establish a fair price for the customer, they add.

Member Adams' speeches reflected yet another departure—quoting the trunklines' net income last year as 13% after taxes but "before interest charges." In 1951, he said that net income after taxes was 14%. As shown in the above table, the 1951 return was 7.36%, based on net assets depreciated.

Commenting on BAO's method, one observer states: "It would seem that the only justification for use of this formula would be if the scheduled airline industry were not a public utility where rates must be determined in the public interest. Yet there are no major characteristics of a public utility not possessed by the airlines. Further, to remove the industry from such status would be to also remove rate-making from governmental jurisdiction.

"The airlines are subject to wide fluctuations in earnings. The first post-war fleet modernization saw an almost overnight change from profitable to deficit operations. A second modernization may well be just ahead of us, if competition forces the industry to employ jet and helicopter equipment on a growing scale. It is important that a realistic view be taken as to the rate base and rate level.

"This is hardly the time to experiment with a new method of establishing the price of service."

The entire situation, he said, seems to bear out the contention of a number of airlines that "rate of return," no matter how calculated, is the wrong yardstick for the Board to use. These carriers have favored a switch to the operating ratio method, under which an airline's health would be determined by the ratio of its operating expenses to its operating revenues.

NEWS BRIEFS

Capital Airlines' 1952 net profit after taxes was \$1,412,643 against \$1,766,141 in 1951, and operating profit totaled \$2,019,538 against \$4,709,145.

Operating revenues (highest in history) were \$40,395,703, up \$1,693,210.

CAA Shake-Up Scored by Rough

THE FIRST knowledgeable criticism of the sweeping reorganization of the Civil Aeronautics Administration (AMERICAN AVIATION, May 25) has come to light with the resignation of Howard F. Rough, long-time executive in CAA in liaison capacities between Washington and regional offices.

In an exclusive interview with AMERICAN AVIATION, Rough has explained his resignation from the post of Special Advisor to the Administrator in protest over the proposed reorganization, and requested that his letter of

resignation be made public.

Howard Rough joined CAA (Bureau of Air Commerce) in 1928 and for fifteen years held top Washington regional posts which brought him closer to CAA regional activities than any other single individual. In 1937-38 he spearheaded the seven region set-up which was adopted after considerable consultation with industry and which was recently reshuffled by new Administrator F. B. Lee.

Following is Rough's letter of resignation to Administrator Lee:

Dear Fred:

It has come to my attention that, in order to meet reduced budget limitations for the fiscal year beginning July 1, 1953, CAA is planning a drastic reduction in the number of Domestic

While I am fully in accord with the need for economy in government, I wish to go on record as being definitely opposed to this approach to the problem, for I am convinced that substantial savings can be effected by elimination of unessential functions and methods of doing business which have mushroomed during the past several years throughout CAA.

I would be one of the last persons to say that no changes are necessary in the existing relationships between Washington and the field organizations, but to consider reducing the number of domestic regions and consequently the service to the public and the aviation industry is, to my mind, a step backward to say the least.

Under the last three Administrators so-called organization planning group has been largely made up of business-administration-trained personnel lacking aviation experience and any real knowledge of the problems of the CAA field organization or of the reasons it was established in the first

place.

To permit another similar group to start hacking the basically sound field organization to pieces instead of correcting the obvious organization-wide defects is simply inviting a complete breakdown of the CAA. The present or-ganization is almost completely dominated by administrative procedures and policies while the technical abilities so plentifully dispersed throughout the organization are in effect of secondary importance. This does not mean all technical services should continue unabated for some of them might well be dispensed with completely.

To remedy such situations does not. however, require another demoralizing "reorganization" but rather a balancing of functions and the placing of administrative management functions in their proper relationship to the main objectives of the CAA. While it would be ridiculous for me to claim to know all the answers to the problems, I am convinced the necessary changes can be accomplished piece by piece in an orderly manner. However, it will take a different approach than heretofore, otherwise CAA-a technical organization-will continue to be dominated by non-technical people. This is not a criticism of any individual or group in CAA, for I realize there is a difficult situation to face, but I cannot believe the approach to the problem is the proper one.

While I realize that I have retired and my present assignment is as an advisor on a special project having very little to do with organization problems of CAA, I still cannot refrain from expressing my views concerning the welfare of the service which I had a hand

in establishing.
It appears to me that CAA (and predecessor organizations), having weathered 20 years under the previous Administration, is now-when a new and more realistic appreciation of its real functions and duties could be expected under the new Administrationabout to suffer a body blow, simply because the same old approach to organization planning is to continue, namely, business management functions will continue virtually unabated while technical services to the public and to the industry are to be drastically curtailed.

Inasmuch as my views with respect to reorganization of the CAA continental regions are at variance with what I understand to be your views, and in order to avoid any possible risk of causing embarrassment within the Administration, it is requested that my appointment as Special Advisor to the Administrator be terminated forthwith.

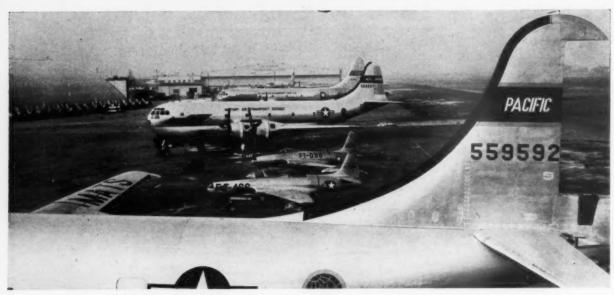
Sincerely yours, HOWARD F. ROUGH, W-1



Howard F. Rough



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FIGHTERS AND TRANSPORTS due for modification line up at Lockheed Air Service.

Industry Split on USAF Modification Plan

Strong feeling and little agreement mark the subject; modifications match original cost of planes.

By Joseph S. MURPHY

SIGNS of growing discontent in industry over the U.S. Air Force's handling of its short-term modification program, coupled with the presence of new faces in the Defense Department, are pointing up the strong possibility of another review of USAF organization, particularly in aircraft development, production, and modification.

Recent events emphasizing the trend are:

• Some strong elements in industry have moved for a change. One top manufacturer not at all content with the wide powers given the Air Research and Development Command in the modification field has taken the issue directly to top Air Force civilian heads.

• The Rockefeller Committee studying overall reorganization of the armed forces has come up with several new assistant secretaries of defense who will enter the picture. One is for research and development alone, another is for "applications engineering." The latter would oversee weapons progress from the research stage through quantity production, but what is even more relevant, would help determine their suitability, reliability, simplicity, and economy of production.

• New development plan aimed at eliminating costly modifications by bet-

ter planning in early development stages of new designs has been adopted by ARDC. It calls for greater industry activity in development through wider use of design study contracts.

These events all revive the issues of several years ago, when the Vandenberg Plan, set up by the now retiring USAF Chief of Staff with the support of Lieut. Gen. J. H. Doolittle, elevated research and development functions in the Air Force to the stature of a full command. Along with the change ARDC was given wide powers (formerly concentrated solely in the Air Materiel Command over what modifications would be made.

But the overall modification issue is shaping up into two areas of discussion with much controversy in each. One is concerned with how the USAF should be organized to handle the modification program; the other with the question of how the modifications should be handled, in or out of production lines.

• In regards to USAF organization, there remain today many segments of industry that strongly opposed the move that set up ARDC as a separate command and have still not fully accepted the idea. Feeling is that ARDC throws just too much weight, and that it is overdoing its mission of "continually improving the equipment of today's Air Force" by forever adding gadgets and changing systems with little regard for

the effect that it is having on produc-

But it is not by any means a united industry contention. There are just as many quarters in industry who favor the new USAF organization and consider it a big improvement over the former highly centralized control, which put all of the development and procurement power in the hands of a few in the Air Materiel Command at Wright Field.

• How should the modifications be handled as to production? Some feel that only those changes of an absolute "must" category should find their way into the production line once the design has been set, and that all others of lesser importance should be accumulated and done somewhere else, such as a modification facility set up for just that purpose.

But the stronger element in the industry, as well as the USAF, contends that the only way is to get all the changes possible into the production line at the earliest possible time; that this is the cheapest way and the most desirable from the standpoint of efficiency. It produces an airplane "out of the barn" with all of the latest model improvements and ready to go into operational service.

A strong point here is that any modification after an airplane is built means costly disassembly, modification, and reassembly, and involves the handling of many other components not involved with the change. If the modifica-



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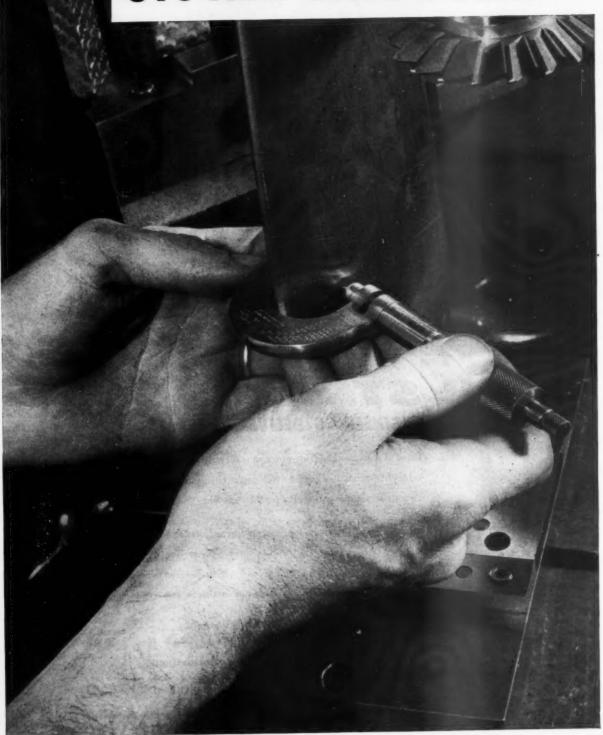
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The above chart illustrates the huge increase in the number of different skills at Pratt & Whitney Aircraft from 1946, when only piston engines were built, to today when four different types of engines are in production or are being prepared for production. Demands for new skills, of course, are only one phase of engine manufacture. But the relationship illustrated here is typical of all phases of manufacturing the advanced, complex engines required today.

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tion were properly planned on the production line, these components would not yet be installed.

Either way the business of aircraft modification is a big one and the stakes are high for the bidders. One report shows that on the average it costs as much to modify an aircraft throughout its military life as it does to build it.

Meanwhile the two-year-old Air Research and Development Command has come up with a new longrange plan to solve the modification problem. The idea of Lieut. Gen. W. A. Hotman, director of tactical combat systems at the Command's headquarters in Baltimore, is to go a step further and cut out costly modifications by better planning before the mock-up stage.

The Hotman plan, which is not restricted to tactical aircraft projects, calls for industry participation in development on a much wider scale through design study contracts. This activity will start from the time the USAF Chief of Staff issues a General Operational Requirement (GOR) and ARDC has translated it into technical problems requiring solution.

Study Contracts

The plan is to have a number of manufacturers (usually three or four) take over the problems by means of study contracts. Working with ARDC centers, each would come up with one or more aircraft designs to meet the operating requirement. In this process ARDC and industry together will fix the technical capabilities of the aircraft and system design (engine power, speed, altitude, range, type of weapons, etc.) for its planned operational life.

ARDC claims that the plan will not only solve the problem but will also speed up development. The time between the issuance of a GOR and the letting of a Phase I (mock-up) contract will be cut from the present 18-24 months to something short of one year.

But whether this plan comes too late to stave off a move to curb ARDC authority is another question. Reports are that other ideas as to how development should be handled to cure the modification headache are cropping up in the Pentagon.

One is a scheme to build a dozen or so versions of new models with minor variations in each, and to give all airplanes a thorough shakedown on a round-the clock basis until several thousand hours of flight testing are accumulated. In this way the "bugs" are all worked out of the prototype designs, and the final version is set for production.

All things considered, the matter of USAF modifications stands to get a thorough going over in the next few months.

Twining-Radford Scrap Still Likely

FROM ALL OUTWARD indications, the new Joint Chiefs of Staff will not be the gentlemanly highlevel horse-trading group that Generals Bradley, Collins, Vandenberg, and Admiral Fechteler are now. For the past few years, Vandenberg, Collins, and Fechteler have been yielding to each other on pet projects in return for support on ones of their own.

But the incoming Air Force Chief of Staff, Gen. Nathan F. Twining, has served notice on the Chairman-to-be, Adm. Arthur W. Radford, that if Radford still feels about strategic bombing as he did when he led the "revolt of the admirals" in the B-36 controversy in 1949 he will have to contend with Twining in JCS sessions.

The notifications came in a recent Twining speech at Dallas, Using the same phrases uttered by Radford in condemning the B-36 and high-altitude bombing from long-range aircraft, Twining staunchly defended the strategic bombing concept. Take, for example, the Radford testimony before the House Armed Services Committee in 1949 and Twining's rebuttal:

- RADFORD (October 7, 1949): "There are no significant developments which have improved bombing accuracy at 40,000 feet . . . under battle conditions . . . over that which [was] obtained in the last war for bombing at 20,000 feet . . . Bombing at very high altitude can be effective only on targets of great area. Such targets, unless we are committed to the concept of mass area bombing of urban areas, rather than precise bombing of specific military targets, are very limited in number."
- TWINING (May 22, 1953): "Many false statements have been made concerning the difficulties of high level bombing. High level bombing has sometimes been referred to disparagingly as "mass bombing" or as 'area bombing' in supposed contrast to bombing from intermediate or lower levels. The truth is that the difference in accuracy of bombing from different levels is small. In Korea at the present time, radar-controlled bombing from an altitude of several miles is generally more accurate than dive bombing in daylight."

And again:

- RADFORD (1949): "Development in the AF of planes suitable for tactical and fighter missions has suffered by overemphasis on the heavy bomber . . . Less than six per cent of AF research and development funds is earmarked for tactical and fighter types. The lack of adequate fighters may have grave consequences for future security of our bases and our homeland. It is not only wasteful, but may be disastrous to spend our scarce budget dollars on large, expensive planes dedicated to an unsound theory of warfare."
- TWINING (1953): "No other aspect of military aviation has been attacked and misrepresented so persistently [as long-range bombing and bombers] . . . Long-range bombers represent only a small percentage

of the planes in the AF combat arsenal . . . The complex new equipment we are now buying for this [Strategic Air] Command . . . is expensive, of course. But . . . the actual operating expenses of SAC for this fiscal year amount to only one dollar for every 17 dollars that go to other national defense purposes . . . The operating cost of this Command absorbs only 16% of total AF expenditures for this year."

Thus, if Radford's views still prevail after he takes over Bradley's job on August 16, the conflict will become even more apparent. Twining worked closely with Vandenberg on the Air Force's decision to concentrate on strategic air power in the lean days of 1947-1950. The shouts may not echo down the halls outside the plushy sanctum sanctorum of the JCS in the Pentagon, but the battle will be on nevertheless.

When he appeared before the Senate Armed Services Committee (which subsequently recommended him and other new members of the JCS for approval), Radford indicated that in the four years that have elapsed since the B-36 fight, "There have been developments—improvement in materiel and various other changes that caused me to modify my position."

The admiral also tried to clear up his stand on strategic air power. "I feel that a Strategic Air Force is one of the most important arms of our national defense. There must be a very efficient and powerful strategic air arm in our air forces," he said.

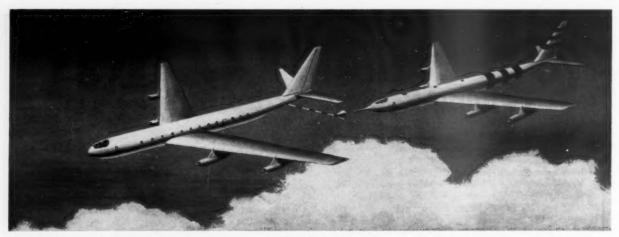
Radford's use of the plural—air forces—shows that he apparently still feels carrier-based aviation is just as much a part of long-range bombing as SAC, despite the fact that strategic bombing was declared to be the basic responsibility of the USAF in the Key West Agreement. But he told the Senators there was "no chance" of any future disagreement on the functions of the individual services.

General Twining apparently is also in disagreement with the Administration's decision to abandon work on nuclear-powered bombers. He says, "The principal limitation of air power is range, and it is for this reason that the first nation to produce atomic-powered bombers in quantity will have a tremendous advantage."

The Atomic Energy Commission's budget for 1954 indicates that General Electric and Pratt & Whitney will have to give up their construction of atomic engines and Boeing and Convair will eliminate plans to build the airframes, even though research work is expected to continue.

Incidentally, another aircraft firm simultaneously revealed that it too had been developing atomic plane engines and had dropped the project because of the difficulty in shielding the crew. The company is North American Aviation, which has been working with the AEC for seven years.

. . . ROBERT M. LOEBELSON



REVERSING USUAL (military) practice, future commercial flight refueling operations will involve no maneuvering by the aircraft being fueled. This artist's impression shows how the jetliner will continue on its normal course while the tanker comes up from the rear and refuels it. In this case no special skill is required on the part of the airliner's crew and the passengers have no knowledge that the operation is taking place.

U. S. Carriers May Test Flight Refueling

New technique involves no maneuvering for transport pilot; equipment ready in two years.

By ANTHONY VANDYK

FLIGHT REFUELING is about to stage a big come-back in the commercial transport field, due to the advent of the jetliner. The large fuel consumption, high operating altitude, exigent take-off and landing characteristics of the jet transport combine to make flight refueling a "natural" for commercial jet operations.

This new potential has already been the subject of intensive study by Flight Refueling Inc. and its sister organization, Flight Refuelling Ltd. of England. The companies are confident that no difficulties will be involved in the adoption of the present highly successfully military flight refueling system to commercial use. It is significant that tanker versions are to be built of two forthcoming jet transports—the Boeing 707 and the Vickers 1000.

Flight Refueling Inc. believes that equipment suitable for installation in commercial transports should be available in about two years. Cargo planes would be used for initial tests, and present plans call for the cooperation of Pan American World Airways and Transocean Air Lines in these trials. The program would involve the flight refueling of Douglas DC-4 and DC-6A aircraft which could be fitted with fuselage tanks without any trouble.

After intensive testing of flight re-

fueling on these cargo transports, the next step in the Flight Refueling Inc. program would be an approach to the Civil Aeronautics Administration for approval of the use of the system on passenger aircraft. The company feels that CAA would be sympathetic to such a request if a successful record on cargo operations could be shown.

The British authorities, it is felt, would be equally receptive, if not more so, in view of the extensive commercial flight refueling experiments which have taken place under United Kingdom sponsorship in the past

sponsorship in the past.
As long ago as 1938 Flight Refuelling Ltd., British parent company of Flight Refueling Inc., received a contract for its first commercial operations to service flying boats operating on the North Atlantic run: on regular schedule with BOAC predecessor company Imperial Airways in 1939, 15 refueled crossings were completed without incident. After the war the experiments were resumed and successful results were obtained in the fueling of converted bomber aircraft of BOAC and British South American Airways between London and Montreal and between London and Bermuda.

Although at the end of Bermuda trials the British Ministry of Civil Aviation recorded the conclusion that "the trials have demonstrated that regular flight-refueling services could be operated over the route," neither BOAC or BSAAC ever went on record with a statement about the operations.

Since the conclusion of the BOAC trials early in 1948, the corporation's interest in flight refueling has been revived in view of the desire to increase the range of the Comet. Moreover, military developments of flight refueling systems in the past few years have been such as make previous commercial experience almost completely irrelevant. New lightweight equipment, stepped up fuel transfer rates, and new radar aids to facilitate rendezvousing have contributed to make flight refueling an integral part of present-day military operations and planning.

Today the problem is how to apply these military developments to commercial use. The major difficulty is that with Flight Refueling Inc.'s present probe-and-drogue system the pilot of the receiving aircraft has to fly into the tanker's drogue, whereas current feeling is that for commercial operation the tanker pilot should do the maneuvering and that the tanker should fly "into" the receiving aircraft rather than vice-versa (see drawing); in this way the passenger would not see the tanker and would not be aware of the fact that the transport was being refused.

Flight Refueling Inc. believes that it will be possible to develop an arrangement whereby the transport aircraft pilot will have no part in the flight refueling operation: the jetliner will continue on its normal course while the tanker comes up from behind it, flies into a drogue extended from it, carries out the refueling and then disconnects.

Thus the tanker pilot will be completely responsible for locating and refueling

the transport.

Technically there seems to be no particular difficulty to prevent flight refueling proving acceptable to operators, but economically the situation may require considerable examination. Nevertheless there are many readily

apparent advantages.

• Flight refueling obviates the need for very large long range aircraft; the flight-refueled plane may be between one-half and one-third the size of one designed to take off with sufficient fuel for a 5,000-mile flight. This brings down capital and running costs - the initial cost of aircraft, cost of insurance, cost of fuel and oil, and cost of maintenance are all roughly proportional to the size of the plane, while the prob-lems associated with the design and construction of very large aircraft prolong the periods both of building and testing. Even more important, for any given payload, the requirement of all long-distance routes can be met by a single aircraft specification, leading to standardization of design and fleets.

• The alternatives to flight refueling are either excessively large aircraft, with small percentage payloads, or intermediate landings. All landings made merely for fueling cause delay, expense, and inconvenience. The loss of one hour for each of two intermediate stops on a journey of 20 hours flying time is equivalent to a 10% reduction in speed. With increase of flight speed the loss becomes more serious, and a two-hour delay in the journey time of 10 hours, at an average ground speed of 450 mph, reduces the effective speed to 358 mph-a loss of nearly 100 mph. Today the price of speed is high-speed is the main attraction of air transportand the carrier that can get the passenger to his destination fastest is the one which will get the most traffic.

· Elimination of unnecessary takeoffs and landings reduces maintenance costs since the greater part of engine wear and tear takes place during takeoff while the depreciation of landing gears, tires, wheels, brakes, and flap gear is due almost entirely to the takeoff and landing phases. Moreover, most accidents occur during take-off or land-

Airline men see certain problems attached to the flight refueling which might offset the advantages listed above. They point out that owing to modern safety regulations demanding a high reserve take-off power, all modern aircraft are capable of lifting their own maximum design weight into the air from a normal runway and, therefore, the old conception of "taking off light and refueling over the take-off point up to maximum weight," is no longer

The Effect on the Comet

Although the first jetliner scheduled for trans-Atlantic service is the Comet III, use of flight refueling would enable the present Comet IA to fly the Atlantic with a good payload and the Comet II to carry a full payload both eastbound and westbound. The figures below for the difficult westbound crossing (taken from data compiled by Flight Refuelling Ltd. to show the effect of flight refueling on Scandinavian Airlines System's North Atlantic route) clearly demonstrate the potential of flight refueling on the difficult east-

west crossing.

Without flight refueling, capacity or near capacity payload can be carried by the Comet II with landings at Prestwick/Keflavik and Gander westbound, and with a single landing at Gander, when eastbound. The flight may be made non-stop, with full capacity payload, by substituting refueling in flight for the intermediate landings; in the case of westbound flight the second refueling may be dispensed with, though this places the Prestwick refueling rather far out. The payloads for the Comet IA are low on a stopping service, but again may be increased to near capacity by a nonstop, flight-refueled service. The amount of fuel that has to be transferred per refueling is usually of the order of 16,000 or 32,000 pounds.

OSLO-NEW YORK, VIA PRESTWICK

		omet IA	Comet II			
Operational Conditions	Payload (lbs.)	Distance to refueling point (Neut. miles)	Payload (Ibs.)	Distance to refueling point (Naut. miles)		
Landing at Prestwick and Gander Refueling west of Prestwick and landing	4,700	* * * *	15,000	***		
at Gander	14.600	477	15,000	0		
Refueling west of Prestwick only Refueling west of Prestwick	6.800	732	15,000	0 562		
and near Gander	13.800	505		0		
		0	15,000	0		

OSLO-NEW YORK, VIA KEFLAVIK

		omet IA	Comet II			
	Payload (ibs.)	Distance to refueling point (Naut. miles)	Payload (Ibs.)	Distance to refueling point (Neut. miles)		
Landing at Keflavik and Gander	12,100	****	15,000	****		
	14,500	5	15,000	0		
Refueling west of Keflavik only	7,400	244	15,000	51		
and near Gander	13,500	36		0		
		0	15,000	0		

applicable unless the airplane is designed, at considerable development costs, with tankage, wing loading, and receiving equipment specifically for air fueling-in which case it might well be inefficient for normal use.

Another point on which airline men are doubtful is that of the cost of the flight refueling service. If a number of airlines decided to adopt flight refueling, it might theoretically be possible to space the transports so that a minimum number of tankers could deal with a maximum number of rendezvous.

It may be difficult to put a dollarand-cents tag on some of the advantages, such as non-stop service, improved

regularity (due to independence of weather conditions at intermediate airports), avoidance of diversions caused by weather and headwinds, maintenance of time schedules by the proper adjustment of engine cruising conditions and quantities of fuel transferred in flight, and the equalization of payload capacities with and against prevailing winds.

Even though it is probable that flight refueling will not come into its own until transports are specially designed for use with the system, advantages such as those mentioned above will undoubtedly be pondered seriously by all connected operators planning to enter the jet field.



NINE CIVILIAN SCHOOLS assist Air Training Command in keeping USAF supplied with flying and technical personnel.

USAF Accelerates Training Program

New bases opened to meet personnel demand; contract schools to help meet 7200-pilot-a-year goal.

By Lois C. Philmus

THE USAF Air Training Command expended \$945,201,146 during its last fiscal period in its mission of providing the Air Force with trained flying and technical personnel. In an accelerated program to meet the growing demand for trained technical personnel, ATRC intends to train 225,000 technicians, 7,200 pilots, 5,000 aircraft observers, and 14,800 combat crew members annually.

Under the command of Lt. Gen. Robert W. Harper, the Air Training Command has grown from the 29 bases in existence on July 1, 1951, to the present 43. In order to organize the varied training programs better, the command was recently divided into three major segments—Flying Training Air Force (FLYTAF), Technical Training Air Force (TECHTAF), and Crew Training Air Force (CREWTAF).

Today the USAF's training arm represents one third of the entire AF, having one third of the personnel, including cadets and trainees; operating one third of the number of aircraft; and flying one third of the total hours, according to Col. Mark Vinzant, in charge of flight and operations at Scott AFB, headquarters of ATRC in Illinois.

There are currently 100,000 persons in training on all the skills taught by ATRC, with a reported 400,000 having graduated in 1952. The greatest trainee shortage lies in the field of tech-

nical skills, including mechanics and radar and communication technicians, and aircraft observers. In the latter field, General Harper stated during a special press briefing at Scott AFB, the observer shortage—navigators, bombardiers, radar watchers—can be partially laid to the Air Force's past program of "over-selling the role of the pilot." Pilots who washed out were given the "secondary" choice of becoming observers, which left the impression of this career being second best.

The Best Yet

The pilot training situation is the best it has ever been, although not yet perfect. The goal of 7,200 pilots per year will be a reality in 1953. The goal had been reset to 10,000, but was retracted when the Defense Department cut back from 143 to 120 wings. The current flight training program calls for the cadets to receive 472 hours of preflight orientation, 145 hours of primary flight training, 140 hours in basic flight school, and from 21/2 to 31/2 months in advanced CREWTAF training for an overall 18-month program. Current cost per individual cadet training through combat-ready status is now between \$60,000 and \$65,000.

The nine civilian contract schools have played no small part in this healthy pilot training picture. The success of the primary civilian training program has led to discussion among military officials of perhaps extending the use of civilian schools eventually to include phases of basic training, which encompasses T-33 single jet trainer and/or multi-engine indoctrination in the B-25.

It has been estimated that the Air Force is saving about \$34 million annually by following the recommendations of the Stanford study and employing civilian schools to do more than 90% of the primary training. Goodfellow AFB is still employed for primary flight training, but is used chiefly for perfecting new methods, testing equipment, and keeping standards up to date on the primary phase of flight training.

One Air Force officer estimated that the total civilian-Air Force investment in each civilian primary school is something over \$61/2 million annually. It would cost the Air Force about \$10 million to support the same type of operation, he revealed. The reason for this is chiefly laid to Air Force regulations regarding minimums of personnel and equipment, by which the civilian schools are not hampered. It also allows greater utilization by the Air Force of its trained personnel, since the civilian schools have a free hand in selecting their instructors and administrators without infringing on Air Force sources.

Cost-Plus Basis

The nine schools operate under a cost-plus-fixed-fee basis, meaning they are reimbursed dollar for dollar for out-of-pocket expenses, such as personnel, maintenance, food, housing, and academic training, which average about \$3.7 million per year per school. The fixed fee has been set at \$1.15 per student flight-hour, but this week is being dropped to \$1.10, out of which such expenses as public relations and instructor refresher courses are met by the school operator.

The Air Force provides all equipment, including the 125 T-6's used by each school, fuel, major maintenance, etc. The schools, however, are financially responsible for buying their quotas of 27 PA-18's each.

The Piper trainers were phased into the program last February; prior to the cadets entering T-6 training they now receive 25 hours in the Super Cubs. It has been found that this psychological break-in to flying, before going to the hotter T-6, has caused the ATRC's planned attrition rate to drop from its 25% to about 16% or 17%.

Now that the civilian schools have graduated some 9,900 students since the program began in 1951, a changeover in the class set-up is under way. Under the present system, each school operates four classes of 132 cadets before attrition, simultaneously, graduating eight classes

The new schedule calls for a class of 82 students to enter each month, for a total of 12 classes graduating each year. Thus, under the new attrition rate, each school should graduate about 827 cadets per year, compared to the approximate 803 students graduating under the 24% attrition rate. The new schedule will graduate over 200 cadets more than the 7,200-pilot goal anticipates. This means that only 984 cadets will have to enter to meet the goal, compared to 1,056 under the old system. The new class set up will begin phasing-in this month.

The Air Training Command reports that it flew 3,400,000 training hours in 1952. Of this total, the civilian schools report having flown about 1,200,000 hours in their training program. The accident rate in primary school is at its lowest in history, with the Piper PA-18 program receiving major portion of credit for this rate. The overall accident rate for the entire command is estimated at three major accidents (not necessarily fatalities) per 10,-

000 hours.

One of the non-flying training chores of the civilian schools is to provide the 250 hours of academic training to the students, which includes theory of flight, aircraft engineering, meteorology, navigation, code. The schools also maintain extensive maintenance facilities for minor repair, sheet metal, radio repair, etc. Major overhauls are handled by the Air Force itself.

Tricycle Trainer

Reequipment plans for primary training call for the ultimate use of the T-34 tricycle trainer in place of the Piper PA-18, in conjunction with the phasing-in of the North American T-28, which is described as a souped-up tricycle version of the T-6. Target date for the phase-in of the new equipment is set for 1954. The complete changeover should be completed by 1955.

The T-33, basic jet trainer, now being used in the second phase of the ATRC flight training program, will ultimately be replaced by Cessna's T-37. By 1958, the training command expects that a replacement of the T-33 will be mandatory. A twin turboprop trainer, the Beech T-36X is expected to replace the B-25, used in basic multi-engine schools, in the foreseeable future.

The civilian schools' investment in the Piper PA-18's is not expected to be affected by the phase-in of the T-34, since the life expectancy of the plane is only three years in any event.

The biggest question mark surrounding the entire training picture, and particularly the civilian schools, is how the new 120-wing program will affect personnel requirements. It is believed, however, that the pilot training situation will remain constant for at least three years because of the rapid turnover of Air Force pilots because of age and service tours being over in two year's time.

If there should be a cutback in the training program, it is believed that the contract schools will not leave the picture entirely, although there may be cutbacks to seven or perhaps five

Civilians Here to Stay

Whatever may happen under the new economy wave, the Air Force feels that the civilian contractor is here to stay. The cynics who felt it would be impossible to operate a smooth civilianmilitary operation are rapidly backtracking. The greatest tribute to the efficiency of the civilian method of running an Air Force training base has been paid with the recent order to cutback military supervisory personnel at the bases. In most cases, the civilian schools will be minus about 60% of the current military personnel at their bases within the next two months.

The ATRC will still, of course, maintain its liaison over purchasing, AF equipment, and military supervision of the cadets, but the civilian schools will be given an even freer hand than heretofore. It is anticipated that eventually the military checkrides of cadets will be eased up on, although not completely done away with at any time. The way the system works now, the military flying officer rides with each cadet at a prescribed period in his primary training. In the future it might come to the point where the flight officer will only do the wash-out rides, when recommended by the civilian in-

Central Gets 3-year Certificate Renewal

A three year renewal of its local service airline certificate has been granted Central Airlines by the Civil Aeronautics Board. While dropping several route points and adding others, the Board deferred action on Central's request for new routes through Arkansas to Memphis and for renewal of its Paris-Texarkana segment. The fourmember Board's unanimous decision explained the short term renewal (other recent renewals have been for five or seven years), with a statement that the Central case warrants further experimentation.

A 38 per cent increase in airplane tire life is but one of the many proved advantages of the Hytrol Anti-Skid Braking System. Hydro-Aire, Inc., 3000 Winona Avenue, Burbank, California.

tomorrow's aircraft: One step closer

Extending the range and precision of night "sight"



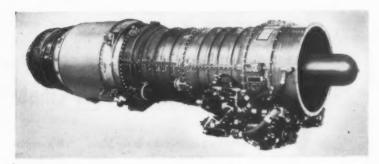
Westinghouse has added a deadly punch to military aircraft with exceptionally accurate electronic "eyes" which can seek out opponents under the toughest visibility conditions.

The Intercept and Fire Control Radar detects a target and permits the pilot to identify it as friend or foe. When necessary, the system presents continuous, pin-point fire control information. The same radar guides the pilot safely back to his base.

Westinghouse Radar and Fire Control Systems are being used in the U. S. Navy F3D Skynight and have been proved under combat conditions by confirmed victories during night and all-weather operations. Making this product do the job required specialized technique and ability to develop highly accurate and reliable air-borne equipment, yet surmount critical limitations of space, weight and power.

These results come from the Westinghouse wholly owned Air Arm Division, with its twelve years of air-borne radar experience and unparalleled facilities for complete development, production and flight testing. The Air Arm's new plant at Baltimore's Friendship Airport produces the Autopilot, complete fire control system, computers and guided missile components and systems. By concentrating its extensive capabilities on advanced Avionic applications, Air Arm brings tomorrow's aircraft One Step Closer.

J-91007



Westinghouse has brought a two-fisted punch to the F3D Skynight—all-weather fighter. It uses two J-34 turbojet engines developing over 6800-lb. thrust, powering it to operational speeds in excess of 500 mph.

THE SCOPE OF WESTINGHOUSE IN AVIATION

Basic aircraft systems

Turbojet Engines, Fire Control, Radar, Autopilots, Communication Equipment and Electrical Systems.

Ground equipment

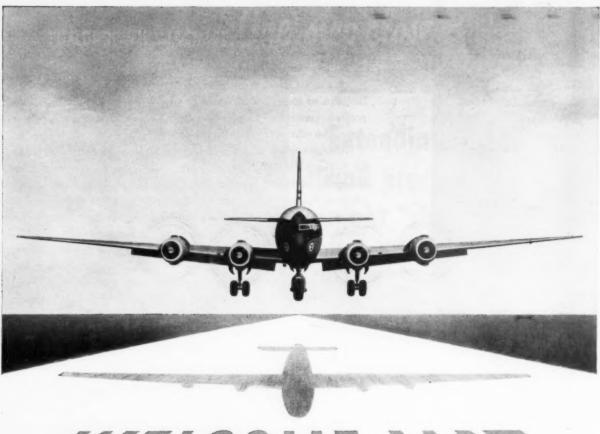
Wind Tunnels, Airport Lighting, Industrial Plant Apparatus.

Air-borne system components

Transformers, Rectifiers, Instruments, Gyro-motors, Temperature Control Panels, Generating Equipment and System Control, Circuit Breakers, Contactors, Motors, Actuators and Hoists, Electronic Tubes, Magamps, Micarta®.

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THE ROYAL WELCOME of "Service in the Mainliner Manner" is now extended to 4 million passengers a year, more than twice the total of six years ago! And it's no wonder that more and more people are changing to Mainliner travel.

It's a friendlier, more personal way of travel. You're treated as a guest. It's speedy—crosses the whole continent in as little as 93/4 hours.

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Both FIRST CLASS and AIR TOURIST service; seats on <u>all</u> flights only 2 abreast on each side of wide aisles.



Copr. 1953 United Air Lines

Extra Section

By William D. Perreault



THE MARKET for twin-engine aircraft might be more profitable if everyone used the same philosophy as KLM Royal Dutch Airlines in allocating costs and revenues. KLM attributes 7½% of all four-engine aircraft revenues to their twin-engine equipment, since it is felt that without this type service at least that much revenue of the bigger planes would be sacrificed. This makes the twin-engine plane picture look much more attractive. It sounds interesting and reasonable.

A change in the oil screens used by line maintenance in draining engine oil into barrels proved an expensive but educational move at KLM Royal Dutch Airlines. Over a relatively short period of time 25 engines were changed because of metal particles found in these screens. Actually maintenance was simply using a finer gage screen and discovering metal chips which originated in oil coolers which were not adequately cleaned after earlier engine failures. With a small stock of oil coolers most of them had been associated with an engine failure sometime in their career. KLM tightened up on cooler cleaning and set up fixed standards for strainer screens.

At Air France's maintenance shops at Orly Field we found an interesting variation in work bench arrangements. Some of the shops use a pipe-framed heavy gage screen "fence" (about ¼" holes) running lengthwise along the bench and standing 20" high. It nicely divides the bench, provides an excellent place to clip instruction sheets and yet doesn't isolate men working on opposite sides.

The de Havilland Comet incorporates a system of speed control which uses the Mach meter to detect excess speeds and send a signal to the powered elevator controls, causing the plane to nose-up slightly and keep speed in allowable limits. The signal initiates the action at Mach .77 and is the British answer to the CAA's proposal for automatically controlled speed flaps to prevent excess speeds.

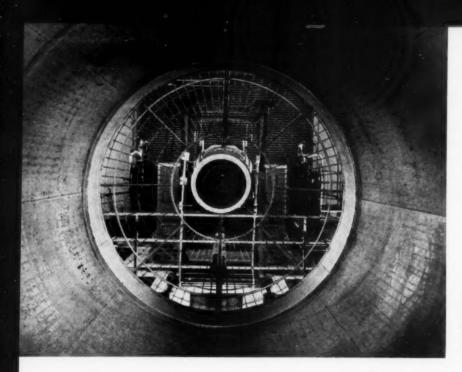
Best looking DC-3 interior we have seen in several years is that of Swissair. The plane has 26 Payloader passenger seats of the chrome frame folding type made by Flight Engineering and Equipment Corp. of Miami. Fresh air inlets and cover plates for reading lights are also chrome. Heavy red carpets on floor. Plastic coated sidewalls, spotless. In every respect the planes are kept in condition comparable to most brand new aircraft.

Everyone who has ever worked in maintenance or operations knows how many times repeated pilot squawks of faulty system operation result in changing the same item of equipment three, four, or five times when the trouble lies in another unit. A carburetor will be changed three nights running by different crews and then a magneto change corrects the rough engine, or vice versa. KLM has designed a simple trouble-shooting chart which hangs in the line maintenance shop and plots all unit changes. Stickers with symbols (cylinders, pumps, plugs, etc.) are placed on the chart opposite the plane number and date of the change. One look and the mechanic has a report on recent changes. It saves needless work.

Life rafts in Sabena's new Douglas DC-6B's are carried in a bunk-like arrangement just forward of the main cabin door on the right side of the fuselage. It makes a smooth installation which should simplify the job of getting the rafts out in an emergency.



A 32 per cent increase in the life of airplane brakes is only one of the advantages of Hydro-Aire's Hydro-Aire, Inc., 3000 Winona Avenue, Burbank, California.



Inside the venturi of a jet engine test cell with a Rolls-Royce Avon engine mounted in the center. Installation shown is at the Standard Motor Company Works in England.

Production Lines





Back in production after a prolonged strike, General Electric's Evendale, Ohio, plant returns to the manufacture of J47 jet engines. Above, compressor blades are checked.

Pilot-line future seems to be in the cards for the Chase C-123B cargo-assault plane, as a result of current budget slashes. The 75-foot fuselage is shown here in master mating fixture at Kaiser-Frazer's Willow Run plant.



West Coast Talk

By Fred S. Hunter

R OBERT E. GROSS, president of Lockheed, was speaking in generalities at the annual stockholders' meeting when he vouchsafed that the turboprop C-130 had commercial possibilities because it would cut the cost of carrying cargo from 10¢ per ton-mile, the best yet, to four cents per ton-mile.

This is a customary manner of speaking in discussing new airplanes. Always put your best foot forward. If you are talking costs, put the figure low. If it's speed, make it high.

Actually, Lockheed has only the roughest estimates on the C-130's operating costs. The prototype airplane is still several months away from first flight. Engine data is essential in calculating costs and Allison's only experience with the new T56 to date has been on the test stand.

But Lockheed's engineers think Gross may be pretty close. "Five cents anyway," they say.

EXTENSIVE MODIFICATIONS

Neither has Lockheed figured out what it will take to convert the military C-130 into a commercial C-130. The C-130 has a cabin nine feet high, called for in the Air Force specifications. That represents a sharply different ratio of floor area to volume. Among other things, it will mean mechanical loading. Six feet is about as high as a cargo handler can go manually, unless, of course, the airlines start recruiting sky-toppers from the basketball courts for the job.

The military C-130 also incorporates structural weight which would be too expensive for the airlines to haul around. It will be recalled the Air Force competition was for a cargo plane that would carry a 25,000-pound payload 2,500 miles. But one of the C-130 photographs distributed by Lockheed shows a 5,000-gallon F-6 tank truck chugging up the tail ramp into the airplane, evidence of beef in the flooring far beyond any airline need. The aft-loading ramp, while essential to the military, undoubtedly would find disapproval from a commercial freight carrier, not only because it costs space, but because of the structural weight required to make so large a door hold up under the pressure loads of a 40,000-foot cabin.

WEST COAST MISCELLANY

Convair won't confirm, but reports from Alameda say the Navy is scheduled to have the turboprop R3Y's, which will be capable of making the 2,400-mile flight to Honolulu in six and one half hours, replace its Mars flying boats. . . . Lockheed estimates the cost of replacing worn-out machines at \$4,000,000 a year. . . . Ryan Aeronautical will be able to perform virtually all its metal stretch operations within the plant after it completes installation of the second of two stretch presses this summer. It has been having to use outside contractors on this work on Boeing C-97 parts. . . . Engineering flight test, formerly part of the technical section, has been elevated to a section of the engineering division at North American Aviation. George Mellinger is chief of the section, which now has 500 employes, and Roy Ferren is assistant. . . . Test flying of both the Douglas DC-7 and the Lockheed 1049C Super Constellation are bearing out Gordon Christy's prediction that the Wright compounds in the four-engine configurations would be real quiet-like overhead. . . . G. M. Giannini & Co. expects its new factory building at Pasadena to be ready in September. . . . Ten foreign nations are using Lockheed T-33 trainers. . . . Local San Diego reaction to General Dynamics appears good. . . . Gossip up Muroc way is that you can look for Jacqueline Cochran to try for a couple more records with her Canadair-built F-86 as a result of her success over the 100-kilometer closed course.



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Maintenance Bulletin Board

Analyzers Pay Off For BCPA

Period	Plugs Rem'v'd at Scheduled Rem'v'l Period	Plugs Rem'v'd Off Schedule	Total Plugs Used	No. of Delays Due to Ignition	Total Time Required for Delays (hrs.)	Average Hours Required per Delay
JANUARY TO AUGUST, 1952	5,022	1,544	6,566	28.0	113.31	*
stalled or Used	7,540	2,329	9,860	42.0	169.97	4.04
	1,762 alyzers Bein		2,298	9.5	19.59	
Installed and Only F	7,048	2,144	9,192	38.0	78.36	2.06
DECEMBER, 1952, TO FEBRUARY, 1953	1.602	277	1.879	2.0	2.42	
Installation of Airborn Completed and Used	e Bendix An	alyzers	2,010	2.0	2.20	
ANNUAL AVERAGE	6,408	1,108	7,516	8.0	9.68	1.21

Ignition Analyzer Works for BCPA

British Commonwealth Pacific Airlines, Ltd., operating four Douglas DC-6 airplanes between North America and Australia, reports an impressive record of results for the first six months of its operation with Bendix airborne ignition analyzers. The record:

 A 24% reduction in total spark plug removals, both scheduled and unscheduled, with an increase in spark plugs' life from 146 to 190 hours.

• An 80% drop in station delays due to ignition system troubles.

• An overall cut in ignition delay time of 94%.

Comparing its performance between January and August, 1952, when no analyzers were used, with that of the transition period of September-November, 1952, and the December, 1952-February, 1953, period when all aircraft were equipped, BCPA estimates a 52% annual average drop in the number of off-scheduled spark plug removals: from 2320 without analyzers to 1180 with the Bendix airborne units installed.

Equally significant is a reported reduction in the total delay time absorbed in correcting ignition troubles, where the annual average of 169.97 delay hours in operation without analyzers dropped off to 9.68 hours, little more than two hours per airplane for the year.

The airline operates its DC-6's with Pratt & Whitney R2800-CA15 engines and uses the Scintilla high tension ignition system. With the limited experience gained to date, the dollar savings on spark plugs, along with installation and removal labor savings (figured on Australian labor rates), is expected to amount to \$3100 annually.

Not taken into account in this calculation is the greater but intangible value of fewer delays, the reduced delay time when trouble does occur, and the improved passenger good will that can only result from better on-time performance.

New CARs Result from Airworthiness Review

The Civil Aeronautics Board, in a sweeping revision of Civil Air Regulations growing out of the 1952 annual review of airworthiness regulations, has adopted these new or revised rules:

• CAR Part 1—Delegates manufacturing inspection responsibilities, in the past borne by CAA, directly to the manufacturer. Change applies where parts are manufactured under a type certificate only, and includes a seven-point program for a manufacturer to obtain CAA approval of his quality control system.

• CAR Part 3—Aircraft such as the C-46 which in the past could be certificated under this part will no longer qualify under the newly adopted 12,500 pound maximum weight limit. An Airplane Flight Manual for planes under 6,000 pounds gross weight is no longer required in favor of the use of placards, markings, or manuals.

• CAR Part 4b—New cockpit standardization rules for transport category aircraft reflect the agreements of the Munitions Board and the Society of Automotive Engineers; ditching equipment standards are outlined in detail; and independent means are required for regulating coekpit ventilating airflow and temperature. Aircraft manufactured after June 30, 1954, must have Zone 1 power plant fire extinguishers or a fire-proofed nacelle skin in Zone 3. Newly certificated aircraft (applied for after May 16, 1953) must have both features.

• CAR Part 6—Requires carriage of sufficient fuel in helicopters for at least one hour's operation at maximum continuous power and rpm; where more than one fuel tank is installed, a low-level fuel warning indicator is now required. A fire detector system becomes a must item in helicopters for engines of 900 cubic inch displacement or more.

CAR Part 13—New rules provide separate engine test run standards for single-speed and two-speed engines, and a third for engines used in helicopters.



New Preservative Unit

Texas Metal and Manufacturing Co. has developed a preservative called Tex-Met Pickler for internal combustion engines. It is used for applying hot corrosion-preventive compounds to engine cylinder walls and exhaust ports.

Maintenance Contract

Radio line maintenance for American Airlines' Douglas DC-6 coach operations into Burbank, Calif., will be handled by California Central Airlines under a contract arrangement reached by the two airlines. All other aircraft maintenance will be conducted by AA mechanic crews based at Burbank.



Windshield Visor Filters Sunlight

A movable windshield visor which absorbs more than 85% of the ultraviolet rays in sunlight that cause eye discomfort has been developed by United Air Lines and will be installed in all of UAL's passenger and cargo airplanes in preparation for this summer's operation. Called the Mono-Rail Sun Visor, the new device is being manufactured and sold by the Hardman Tool and Manufacturing Company of Los Angeles, Calif., under an agreement with United.

The visor weighs less than two pounds complete and is easily installed. It is made up of a ½" stainless steel tube extending along the upper edge of the windshield. Attached are two 8½" x 11" visors of smokey-green du Pont acrylic resin, which slide along the steel tube for positioning as needed. When not in use, they can be flipped up onto a storage bracket.

Wright Designs Fix For Turbo-Compound

Wright Aeronautical Division of Curtiss-Wright Corp. has undertaken a modification of the R-3350 Turbo-Compound engine to protect against damage from exhaust turbine blade failures.

One phase of the modification, which was required by the Civil Aeronautics Administration before the engine can be certified on civil transports, calls for installation of a 2½" wide by ½" thick steel guard ring around each of the three turbines.

Other changes developed by WAD and now being tested include:

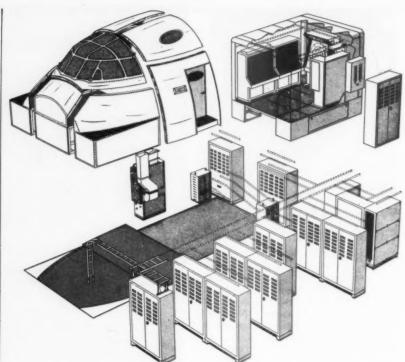
• Lowering of the design fail speed of the turbine blades by drilling a hole (approximately 1/4" dia.) at the root of four blades, thereby holding the failures within a 25,000-26,000 rpm overspeed range.

• Correction of the initial problem of high turbine blade temperatures by improved cooling passage design which will keep the exhaust gases from mixing with the cooling air.









FLIGHT SIMULATOR PACKAGE for Douglas C-124A includes cockpit section (upper left), instructor's compartment (upper right) and analog computers for electronic simulation (in foreground).

C-W Completes All-Electronic Simulator

Latest developments in the design of all-electronic flight simulators became a reality recently when the Curtiss-Wright Corp. announced the completion and acceptance by the U. S. Air Force of a Douglas C-124A flight simulator. The unit is one of four being built for the USAF by the C-W Electronics Division at Carlstadt, N. J., and the first copy will be delivered to Morrison AFB, West Palm Beach, Fla.

The C-124A simulator is truly allelectronic, featuring the use of electronics for all control loadings, in place of the part-mechanical loadings of all other simulators in use today.

Other developments introduced by Curtiss-Wright in the C-124 unit are:

- Complete radio aids simulation with all instrumentation for air navigation instruction, including distance measuring equipment (DME).
- Full-crew cockpit duplication, with electronic actuation of every control, instrument, and switch found in the C-124A airplane.
- Advanced equipment design for cabinets and interconnecting cables, giving greater accessibility to the components for servicing and permitting repair time to be kept to a minimum.

Curtiss-Wright holds the basic patents on electronic aircraft simulators and delivered the first unit, a Boeing 377 simulator, to Pan American World Airways in July of 1949. First simulator purchased by the USAF was for the Boeing B-50 and followed shortly after the training of military personnel in the PAA unit.

Subsequent military orders with C-W for simulators were for units representing the McDonnell F2H Banshee, the Boeing C-97, the Douglas C-124, the Fairchild C-119, and the Convair B-36. Negotiations are under way for the manufacture of a Boeing B-52 unit.

PHOTO CREDITS

Cover: Braniff; 14: USAF; 16: USAF; 18: North American, Douglas, Lockheed, Kaman; 22: Bendix; 29: CAA; 34: Nichols; 37: Stal; 48: Air Training Command; 54: Standard Motor Co., General Electric, Chase Aircraft; 58: Curtiss-Wright.

New Products

Waterproof Tape.

A lower cost pressure sensitive tape for overseas waterproof packaging, called Permacel 691, has been announced by the Industrial Tape Corporation. Intended for industrial and defense use in the waterproof sealing of cartons and equipment, the tape conforms to Spec. JAN-P-127, Type I, Grade B. It will be marketed as a companion product to the company's Permacel 68, but will sell at much more economical price.

Address: Industrial Tape Corporation, New Brunswick, N. J.



Decreasing Machine

The Topper Equipment Company of Rahway, N. J., has introduced a new degreasing machine called the Circosonic Degreaser which uses ultrasonic waves as the source of agitation for cleaning oil, grease, chips, and other contamination from small precision parts. The unit uses an ultrasonic generator developed and manufactured by the General Electric Company which converts high frequency electrical energy into high frequency mechanical vibration by means of a quartz crystal.

The generator is used in conjunction with specially developed Circo vapor degreasing equipment. The energy is transmitted up through the cleaning tank, the



Narco DME Installation Announced

National Aeronautical Corp. of Ambler, Pa., has entered its bid for the commercial Distance Measuring Equipment (DME) market with the recent announcement of Narco DME, a 30 pound airborne installation designed primarily for executive, corporation, and airline aircraft and scheduled to become available later this year.

The announcement culminates a twoyear project in which the equipment was developed according to specifications of the Civil Aeronautics Administration Technical Development and Evaluation Center at Indianapolis, Ind., under a project sponsored by the Air Navigation Development Board.

The Narco Distance Measuring Equipment system is made up of an airborne interrogator designed to standard ½ ATR mounting specifications, a range indicator which can be remotely installed from the interrogator (panel mounted) having a 0-20 and 0-200 statute mile selective scale, and a control box to provide separate tuning for DME in those installations having dial-tuned VOR equipment.

Provision is also included for direct connection to airline-type VOR receivers having channel selector switches, whereby DME tuning becomes automatic with that of the ILS or VOR channel.

DME "firsts" claimed by Narco include special identification lighting, a low approach scale, and new dial make-up. A special flashing light may be used to identify positively a ground transponder associated with a known VOR; the Narco equipment is the first with an approach scale as low as 20 miles; and both the 0-20 and 0-200 mile instrument panel dial scales are fluorescent and phosphorescent, permitting accurate reading with or without night lighting.

Accuracy of the equipment in recent tests is said to have been less than $\frac{1}{2}$ mile error on the low approach scale and less than two per cent of the indicated distance on the long range scale.

Other features of the Narco system include unitized construction requiring only standard aircraft d-c voltage supply; four separable plug-in units enclosed in the ½ ATR case for ease of mounting and servicing; crystal controlled transmitter guaranteeing constant frequency under all conditions; and specially developed magnetostriction delay lines designed to ensure precise pulse timing.

DME is the newest addition to the "Common System" of air navigation facilities and gives the pilot a direct reading in miles of the slant distance between the aircraft and a selected ground station (transponder). CAA program for the installation of these ground facilities calls for completion of over 400 stations by the end of 1953.

Address: National Aeronautical Corp., 180 S. Main Street, Ambler, Pa.

region above the crystal being agitated the greatest and serving as the zone where the cleaning is done. Particular effectiveness of new cleaner is claimed where complex

shapes exist in parts, such as corners, cracks, and holes.

Address: Topper Equipment Company, Clark Township (Rahway), N. J.



Support Clamps

Heat-resistant asbestos covered support clamps capable of withstanding 950°-F. temperatures and particularly adapted to jet engine, missile, and other aircraft high temperature locations have been made available by Universial Metal Products, Inc. Of type 321 stainless steel material, the clamps measure ½" in width and are covered with 98%-99% pure asbestos. After assembly the unit is treated with a thorough penetration of Micro-Alumnium finish.

The new Universal clamps are massproduced in a variety of shapes and sizes and can be made to manufacturers specifications.

Address: Universal Metal Products, Inc., Alhambra, Calif.



Electric Motor

An electric motor weighing 28 pounds and rated for 16 hp intermittent duty has been placed on the market by U. S. Electric Motors Inc., aircraft division, for such "rugged duty" applications as powering hydraulic pumps, compressors and hoist. Using 400 cycle, three phase alternating current, the new motor offers internal gearing for multiplied torque at low speeds, and a wide range of gear ratios permits output shaft speeds from 1,500 to 5,000 rpm.

Address: U. S. Electric Motors Inc., Aircraft Division, Terminal Annex (Box 2058), Los Angeles 54, Calif.

Seating Compound.

A brush seating compound which will assure 100% contact of commutator brushes with the commutator in only 20 revolutions has been placed on the market by the Allen Electric and Equipment Co. Called "Fast Seat," the new compound is said to be suitable for use on all types of generators and to be more efficient than brush seating stones

Advantages claimed for "Fast Seat" are economy, prevention of burned armatures, and increased brush life. It is said to be particularly convenient for use on closed type generators where brushes are not easily accessible.

Address: Allen Electric Equipment Co., 2101-2117 North Pitcher Street, Kalamazoo 13F. Mich.

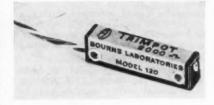


Lightweight Relay

A lightweight relay for all types of ground and airborne equipment, designated the series 2800, has been introduced by the Advance Electric and Relay

With a contact rating of 0.25 amps at 8,000 volts d-c, the new Advance unit measures 2½" x 1½" x 1½". Of the single throw, normally open double-make variety, the series 2800 relay is also available in the single-pole, single-throw, normally closed, and the single-pole, double-throw designs.

Address: Advance Electric and Relay Co., 2435 North Naomi Street, Burbank, Calif.



Potentiometer

A sub-miniature potentiometer called the Trimpot model 120, designed for precision circuit trimming in miniaturized equipment, has been developed by the Bourns Laboratories.

Measuring 9/32" x 5/16" x 11/4", the new potentiometer can be mounted individually or in stacked groups and accurate adjustments are made by turning the exposed slotted shaft with a screwdriver. Units are available in standard resistances ranging from 250 to 10,000 ohms.

Address: Bourns Laboratories, 6135 Magnolia Ave., Riverside, Calif.



Access Door

A flush type access door and doubler developed by the Hartwell Aviation Supply Company is designed to provide ready access for aircraft maintenance and inspection. Of the rotating type, the new Hartwell access door requires a quarter turn to release and another quarter turn to remove. Access door diameter is $1\frac{1}{4}$, and doubler provides an accessible area of $1\frac{1}{2}$. Doublers are available in stainless steel or dural.

Address: Hartwell Aviation Supply, 9035 Venice Blvd., Los Angeles 34, Calif.



Pulse Transformer

A pulse transformer weighing less than .03 ounces for use in missiles, computers, and computer circuits has been developed by P C A Electronics, Inc. Identified as the MPT-101-0.1 pulse transformer, the new unit conforms to MIL-T27 test specifications and, although specially suited for miniature assemblies, will reportedly operate equally well in conventional circuits.

New design techniques and a special iron core used in the MPT-101 make possible 0.1 microsecond pulse widths and rise times of less than .005 milli-microseconds when used in recommended circuits, according to the manufacturer. Unit is impregnated and imbedded in an epoxy resin, is hermetically sealed and leads coming from transformer are said to be capable of withstanding a five pound pull.

Address: P C A Electronics, Inc., 6368 De Longpre Avenue, Hollywood 28, Calif.



EVERY JOB — MINOR ADJUSTMENT TO MAJOR OVER-HAUL — IS DONE TO AVIATION'S HIGHEST STANDARDS

Whether you need a periodic inspection or a complete engine overhaul, PAC has the craftsmen and the equipment to do the job the way you want it—promptly and dependably. All component parts are restored to original factory standards.

Here at PAC's One-Stop Service Center you can get major conversions to any specifications. You can have any type of special installation—long range fuel tanks, custom interiors, edge-lighted instrument panels, or modernized picture windows.

So whatever type of aircraft you operate—commercial, corporate or executive—look to PAC...America's largest maintenance and supply company.



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Airline Commentary



By Eric Bramley

INTERESTING facts that airlines would do well to make known to the public: In 1952, domestic trunklines flew 12 billion passenger-miles. At average speed of 220 mph, this required 55 million hours of the passengers' time. If the passengers had been forced to use trains at average speed of 45 mph, this amount of travel would have required 275 million hours. Net savings by air: 220 million man-hours.

If the average passenger made \$6,000 yearly (\$3 per hour), the net savings to the public, by air, would be \$660 million! (Thanks to Jess Bennett, assistant to the president of Braniff Airways in Washington, for the calculations).

Congratulations to American Airlines on its A-l after-midnight radio program, "Music Till Dawn." The all-night show is sponsored on CBS in six cities: Washington, New York, Boston, Chicago, Dallas, and San Franciso. Musical selections are excellent; commercials are short and in good taste. It's good listening.

One of the year's best promotional jobs was done by Central Airlines when it opened service to Stillwater, Okla., on April 26. Highlight was the signing of a book by practically everyone in the town, thanking CAB for granting Central permission to serve Stillwater. Thus, the citizens were made completely aware of the new service, and CAB knows that they know. Board members were impressed. Member Chan Gurney commended the airline, suggested the book be returned to it rather than filed and forgotten in Washington. It's an idea that can be used elsewhere.

First timetable issued by Delta-C&S Air Lines since the merger contains two pages of editorial material and a page of pictures (covering vacation spots on the company's system). Should catch the passengers' attention. We understand the feature will continue.

Something we've never seen in this country: In the waiting room of Swissair's administrative offices in Zurich are about 30 Kodachromes of scenic points on the airline's routes. They're mounted on a waist-high shelf along one wall. Installed on a track over them is an illuminated magnifying glass. By sliding the glass along the shelf, you can take an interesting "tour." A good sales device.

We understand that international pilots, who tear their hair at the number of forms that must be filled out for an over-ocean flight, have a new saying: "When the weight of the paper equals the weight of the airplane, you can take off."

Airlines would do well to obtain a new 21-page publication entitled "The Common Man... Up In the Air." Written by Howard G. Kurtz, Jr., and published by the Flight Safety Foundation (2 East 64th St., New York), it deals with "the psychology of passenger reactions in flight." Kurtz, incidentally, has been in the industry over 20 years.

The publication is extremely interesting reading. It covers general passenger behavior—why passengers become anxious, why it is so important that an airline's personnel do something to overcome this condition, etc. Psychology is dealt with in easily understood language. We think that pilots, stewardesses, and passenger

People

MANUFACTURING

Michael J. McCormack has been elected a vice president of Breeze Corporation, and will serve as the firm's general sales manager. Prior to his appointment with Breeze, McCormack was director of production for the Eastern Air Procurement District with the Air Force.

C. C. Pearson has been named vice president in charge of manufacturing for Beech Aircraft Corp. Pearson joins Beech from the Glenn L. Martin Co. where he has been vice president of operations.

Lloyd C. Hill has been promoted from comptroller and assistant to the general manager to vice president and general manager of Summers Gyroscope Co., Santa Monica, Cal.

Landon E. Taylor and Robert F. Huebner have been named vice president and treasurer, respectively, of Great Lakes Airmotive.

Dr. Louis F. Doty, formerly an aeronautical research scientist at the Lewis Flight Propulsion Laboratories of the National Advisory Council for Aeronautics, has joined Aircraft Armaments, Inc., as design engineer in the Structures and Aerodynamics department.

H. B. Salada has been named assistant general manager of the Chance Vought Aircraft Division, United Aircraft Corp.

R. Steve Sasnett has been named to head the newly created technical liaison office at Boeing Airplane Co.'s Wichita Division. Sasnett is presently senior technical representative in Boeing's Seattle Division.

Lt. Gen. Elwood R. Quesada, USAF (Retired) has recently been elected a member of the board of directors of Lockheed Aircraft Corporation.



Quesada



Mariner

AIRLINES

James W. Mariner, assistant vice president of sales for Northwest Airlines since October of 1952, has been promoted to the post of vice president of sales. Other recent promotions by Northwest: C. L. Stewart, assistant vice president-plans; W. J. Eiden, assistant vice president-budgets; Dale Merrick, assistant vice president-properties; and Frank J. Scott, assistant secretary.

Charles F. Sharp, assistant vice



Latest product of creative Ryan aircraft engineering and manufacturing is the Firebee, the newest high-speed, high-altitude jet-powered aerial target plane. The Firebee is remote controlled and recoverable by parachute.

This new advance-type swept-wing jet aircraft has been developed as a jointly sponsored project of the Air Force, Army and Navy. It provides all the Armed Forces with an efficient answer to the vital need for a jet target with the performance characteristics of modern fighter aircraft.

The FIREBEE is another example in the long list of Ryan contributions to the advancement of aeronautical science.



RYAN AERONAUTICAL COMPANY · LINDBERGH FIELD · SAN DIEGO 12, CALIFORNIA

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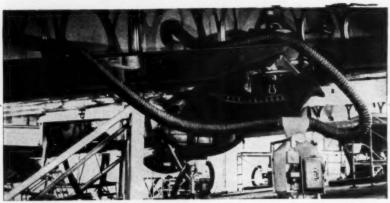
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NEED RUGGED DUCTING THAT OFFERS

Minimum Weight Maximum Flexibility?



You should know about FLEXIBLE'S LINE OF TUBING For Aircraft and Air Conditioning

SPIRATUBE is used by leading manufacturers and major airlines to heat, cool and ventilate for worker efficiency and passenger comfort. It is quickly and easily installed, bends anywhere with minimum crimping. No turn is too short, no angle too acute.

FLEXFLYTE aircraft ducting is specifically manufactured to withstand wide temperature and pressure ranges for unobstructed flow of air to any point...at any time.

NOW, FLEXFLYTE IS ALSO AVAILABLE WITH FLEXIBLE'S NEW FT-506 MIRACLE COATING WHICH HAS 200 TIMES THE ABRASION RESISTANCE OF ANY TUBING OF ITS TYPE AND WEIGHT!





CORPORATION

Guilford, Connecticut

Pasadena 1, California

With today for further interstation on Plexible's versatile line of aircraft cucing!

president of sales for National Airlines, has taken over the systemwide sales activities resigned by Walter Sternberg, who has moved on to the presidency of Resort Airlines.

Edwin A. Koch has been named comptroller of California Central Airlines. Koch, formerly assistant treasurer of the Bell and Howell Co., will make his headquarters at CCA's general offices in Burbank.

Delos Thurber has been named to succeed Walter L. Hurd, Jr., as general operations manager of Philippine Air Lines. Hurd, who was elected a vice president of the company in 1952, has resigned to return to flying as a captain in PAL's international division.

William A. Clary is the new cargo sales manager of SABENA Belgian Airlines.

Frank H. Mattix has been promoted from interline sales manager to sales development manager for Eastern Air Lines.

D. H. Gray has been promoted from assistant director to director of maintenance and overhaul for Trans-Canada Air Lines. Gray succeeds A. M. Sutherland, who is on extended leave because of ill health.

GOVERNMENT

James M. Verner has resigned as executive director of the Civil Aeronautics Board to become associated with the law firm of Turney and Turney, in Washington, D. C.

Colonel Charles H. Voeller, USAF, the new executive assistant to Kenneth L. Vore, director of transportation for the Department of Defense.



The following employes have recently completed 20 years or more of service in the aviation industry:

- O. E. Kirchner, American Airlines. Director, division engineering, New York. 25 years.
- G. Mace, American Airlines. Director, regional operations and maintenance, Los Angeles. 25 years.
- M. Lemmon, American Airlines.
 Supervisor, flight procedures, New York.
 years.
- E. M. Burke, American Airlines. Skycap, Memphis, 25 years.
- George E. Naeve, Trans World Airlines. Foreman, line maintenance, Los Angeles. 25 years.
- S. Rucker, American Airlines. Station agent, Fort Worth. 20 years.
- Earl Hale, Northwest Airlines. Captain, Seattle. 20 years.
- R. C. Anderson, Northwest Airlines. Superintendent, eastern region operations, Minneapolis. 20 years.
- John E. Harlin, Trans World Airlines. Captain, San Francisco. 20 years.

New York-Balboa Reopened Again

The controversial issue of through airline service between the northeastern United States and Latin America is back once again in the hands of the Civil Aeronautics Board — still undecided. After three round trips to the White House, the case, known as the New York-Balboa Through Service Proceeding, has been reopened for further procedural steps at the direction of President Eisenhower.

Twice before, the same CAB findings were returned by former President Truman. These findings would align National with Pan American and Panagra in one interchange and Braniff with Eastern in another, both using Miami as a junction.

Because this runs counter to a voluntary interchange agreement entered by Eastern and Pan American, those two lines are dissatisfied with the CAB findings. National and Braniff favor the decision. Panagra, which changed its position in the middle of the case, went on record as favoring participation in the Eastern-Pan American agreement.

Started in July, 1949, the case is now reopened to receive "more current information than is now in the record.' This, CAB said, was requested by the President because "a considerable period of time had elapsed since the close of hearings."

In March of this year, Pan Am, Eastern, and Panagra requested oral argument to bring in "new facts" which had developed since the record was closed. These were denied by CAB prior to the most recent submission of the case to the President.

There are no indications yet as to how long it will be before the case again leaves CAB. One party, National, claimed recently it will take "from fourteen months to two years," if CAB decides on further hearings.

Status of Mexico Certificates Studied

The question of whether certificates issued six years ago to three U. S. lines to serve Mexico are still in effect is being weighed by the Department of Justice. Status of the certificates, which have never been activated, was placed in doubt by actions of former President Truman in which he "withdrew Presidential approval" of the licenses.

Carriers involved are Braniff, Eastern, and Western. They have never been able to implement the certificates because of the failure of the U. S. and Mexico to negotiate a bilateral air transport agreement. Repeated failures in the past led to Truman's first action last September when, apparently to clear the way for new negotiations, he withdrew his approval of the certificates.

Since CAB merely advised the carriers of this action, but never held proceedings or issued orders revoking the certificates, general feeling was that the certificates were placed in a state of temporary suspension.

Then, just eight days prior to leaving office, Truman sent another letter, just made public, in which he said his previous action "finally terminated certificates" of the three lines. Now the new administration has asked Justice to render a legal opinion to see whether Truman's action does what he contends it does—terminates the certificates.

Lawyers contend there is no doubting the President's authority to so act, but the question in this case is "Did he proceed properly?" If he pulled a procedural boner along the way, his actions may be nullified and the certificates will still be in effect. Otherwise, CAB will have a new Mexican route case on its hands, when and if a bilateral agreement is reached.

CAB MISCELLANY

Pan American World Airways inaugurated service between Manila and Saigon, Indo China on May 25, under a recently issued certificate by the Philippine CAB.

Southwest Airways' mixed-fleet operation of DC-3's and Martin 2-0-2's will be underwritten with mail pay only on the basis of an exclusive DC-3 operation, CAB has ruled. Annually, this will provide about \$250,000 less mail pay than estimated for the mixed-fleet operation.

LACSA, the Costa Rican airline, wants CAB to renew its foreign air carrier permit and to add Havana as a non-traffic intermediate while substituting Managua for Puerto Cabezas, Nicaragua. Revised route would be between San Jose, C. R., Managua, Havana, and Miami.

American Airlines has applied for new segments between Detroit and New York via Philadelphia on one leg, and via Cleveland-Philadelphia, on another.

CAB News

As Of Now . . .

The complex New York-Balboa
Through Service Proceeding, recently
reopened at the direction of the White
House, is stalled again, this time on a
procedural matter. Question is whether
to dispense with conferences and hearings and go straight to oral argument
as suggested by Braniff Airways. Pan
American opposes this method, wants
a conference and hearings to gain additional evidence (see story at left).

A major proceeding is shaping up in the Ozark Airlines Renewal Case, with no less than 22 applications proposed for consolidation. Hearings are scheduled tentatively for August 17, on Ozark's bid to renew its certificate, which expires September 26, this year. Among the local service lines, Central and Lake Central figure in the case as possible recipients of new segments. Of special significance is Eastern's proposal for a new route between Evansville and Twin Cities.

The Flying Tiger-Slick Merger Case, tentatively scheduled for hearings on June 1, has been delayed until June 15, at the request of counsel for American and Northwest, who want additional time to study direct exhibits before filing rebuttal documents.

Recent CAB Decisions

- Pan American World Airways granted one-year extension of exemption which authorizes direct non-stop flights between Havana and Tegucigalpa, subject to certain conditions.
- Aviation Corporation of Seattle, a large irregular carrier, turned down on request for exemption to operate 24 round-trips each four-week period between Seattle and Anchorage/Fairbanks.
- American Airlines and United Air Lines denied applications for expansion of Flying Tiger-Slick Merger Case to include issues of certificate renewal and enforcement matters.
- Piedmont Aviation authorized to omit service at Lexington, Kentucky, on one round-trip flight daily between Louisville and Bristol.

CAB Calendar

June 15—Hearing in Trans-Pacific Certificate Renewal Case. Washington, D. C. (Docket 5031 et al.).

June 15—Hearing in Flying Tiger-Slick Merger Case. Washington, D. C. (Docket 6047).

June 23—Hearing in North American Airlines Enforcement Proceeding. Los Angeles, Calif. (Docket 6000).

July 6—Hearing in West Coast-Hawaii Case. Washington, D. C. (Docket 5589 et al.).

Aug. 17—Hearing in Ozark Airlines Certificate Renewal Proceeding. Washington, D. C. (Docket 5988).

Sept. 21—Hearing in New York-Chicago Case. Washington, D. C. (Docket 986 et al.).

Avien Introduces its "Two-Unit" Fuel Gage

This "repackaging" of Avien's capacitance-type fuel gage is 50% lighter and needs no field adjusting

Ever since Avien developed its capacitance-type fuel gage, our engineers have stuck to the task of reducing the system to its simplest form.

Now they've done it, with the Avien Two-Unit Fuel Gage. Basically, it is the same sharply accurate system that Avien has designed and which has been installed on thousands of modern planes. The big news is in the "package"—for the necessary components have been reduced to a sensing unit and an indicating unit.

Avien has buried the "black box"

Up until now, most fuel gaging systems needed four units; a tank unit, an indicator, a bridge-amplifier, and a shockmount to guard it against vibration.

No field calibration was required for the Avien tank unit or indicator. Avien held them to such close tolerances, the adjustments for individual installations were actually "built in."

The bridge-amplifier (the "black box") was a different story. This intermediate unit was supplied as a common part, for universal application. And that's where field calibration had to be made.

The rigid specs for the bridge-amplifier component have previously held back improvements in the system as to weight, size, cost, performance and flexibility. There was only one answer, as far as Avien was concerned. The "black box" had to go.

In the Avien Two-Unit system, the necessary components for the bridge and amplifier functions have been built into the indicator case. The "black box" is eliminated, and so are certain components which were necessary to make the "black box" universally applicable.

No more field adjustments

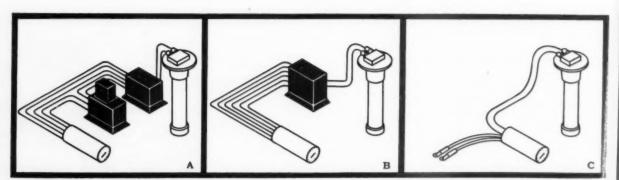
The Two-Unit Fuel Gage gets installation down to "plug-in, plug-out" simplicity.

The Avien tank unit and indicator are pre-calibrated for the aircraft they are designed for. Since the intermediate unit is not needed, neither is field calibration.

Since no calibration is required, all units designed for the same aircraft are interchangeable. Avien units are now all "shelf items."

The Two-Unit Gage eliminates three drawbacks of field calibration:

- 1. No trained personnel needed. To err is human, but human fallibility is built out of the Two-Unit Gage.
- 2. No specialized test equipment needed. No precision condensers, bridges or calibration boxes required.
- 3. No calibration instruction or data needed. Have you ever run this "paper chase"? By the time you've tracked the information down, it's often obsolete. No more of that!



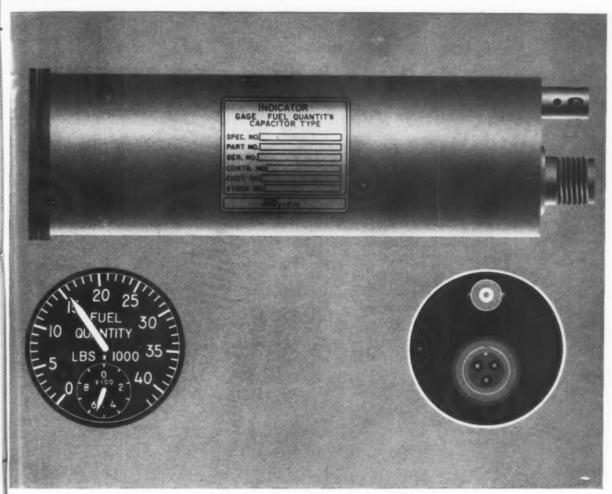
Fuel gaging progress: Early gaging system (A) had four units. The 1952 system (B) incorporated bridge and amplifier into a single unit, reduced weight almost 15%. Avien's Two-Unit Fuel Gage, now being introduced (C) repackages the system with further miniaturization of components, this time reducing weight by 50%.

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Full scale drawing of Avien's Two-Unit Fuel Gage: Front, side and back views of the small-size indicator-amplifier unit. "Plug-in, plug-out" simplicity is the keynote.

Savings all along the line

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Simplification means less weight. In the Two-Unit Fuel Gage, the basic system is reduced in weight by 50%.

There are cost savings, too. Less time is spent in installing the Two-Unit Gage. Less wiring and connectors are needed. Less maintenance is required, because there are fewer comporents to maintain. Trouble-shooting becomes easier, because there are fewer units to cause trouble. And fewer parts must be stocked for replacement and repairs.

Fuel gaging AND fuel management

Avien's Two-Unit system retains an important feature of the former gage. Additional functions for fuel management can be integrated into the basic gage.

This means that simulators, level switches, balancing controls, totalizing equipment, etc., can be hooked up to the bas c system — and with even less difficulty.

A nother interesting aspect is that the Two-Unit Gage is designed to take advantage of recent improvements in mechanical and electronic design—the new lightweight coaxial cable, the new miniature A N connectors, and Avien's new light weight tank units.

Now scheduled for production

The Avien Two-Unit Fuel Gage is now available to meet your manufacturing schedules.

The indicator is available in either large or small sizes, with all varieties of dial configurations.

Every month, Avien produces over ten thousand major instrument components for the aviation industry.

We believe that Avien's Two-Unit Gage will contribute to the obsolescence of many earlier systems, including our own.

For further information write or call us.



AVIATION ENGINEERING DIVISION

AVIEN-KNICKERBOCKER, INC. 58-15 NORTHERN BLVD., WOODSIDE, L. I., N. Y.



This valve is a Spendthrift

ut it needn't be! Valve clearance trouble, with resulting fuel and power waste, is easily detected by the Sperry Engine Analyzer. By using vibration analysis to check each cylinder under normal operating conditions, valve clearances can be adjusted for smoother engine performance. Result . . . engines develop full power—run cooler—use less fuel—last longer.

Vibration analysis, exclusive with the Sperry Engine Analyzer, can be employed either in flight or on the ground. When using the Engine Analyzer, valve clearance can be easily checked at each inspection and overhaul—a profitable procedure for airlines and executive aircraft operators. • In addition to vibration analysis, the Sperry Engine Analyzer also provides detailed ignition analysis. It immediately detects, locates and identifies irregularities in aircraft power plants either during flight or on the ground. Aside from saving ground maintenance time, the Engine Analyzer enables the flight engineer to maintain proper operating conditions at all times and prevents unnecessary component replacements.

 Our nearest district office will give you complete data upon request. SPERRY PORTABLE ENGINE ANALYZER



ENGINE ANALYZER IS MANUFACTURED AND LICENSED UNDER JOHN E. LINDBERG, JR. PAT. NO. 2518427. OTHER U.S. AND FOREIGN PATENTS

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1952 Airline Salaries

Following are 1952 airline salaries as reported to CAB:

Trunk Carriers

PAN AMERICAN-GRACE AIRWAYS, INC.

Andrew B. Shea, pres. and dir., no salary: Howard L. Clark, v.p. and dir., no salary (resigned July 31, 1952); Erwin Balluder, v.p. and dir., no salary; Douglas Campbell, v.p. and gen mgr., \$22,875 salary (up \$375), \$4,500 bonus and indirect compensation; T. J. Kirkland, v.p., \$19,875 salary (up \$375), \$2,-250 bonus and indir.; J. T. Shannon, v.p., \$8,479.17 salary (resigned April 30, 1952. Salary amount stated covers through June 15, 1952.); K. A. Lawder, v.p. and comptroller, \$18,500 salary (up \$750), \$2,500 bonus and indir.; E. G. Bern, v.p., \$16,500 salary, \$1,500 bonus and indir.; W. F. Cogswell, secy., no salary; J. S. Woodbridge, treas., no salary; H. Preston Morris, asst. secy., no salary; A. J. Phelan, asst. comptroller. \$10,386.67 salary (up \$824.17), \$800 bonus and indir.; E. E. Spencer, asst. treas., \$9,750 salary (up \$291.47), \$650 bonus and indir.; W. F. Lewis, asst. treas., \$10,416.67 salary (up \$416.67), \$650 bonus and indir.

UNITED AIR LINES, INC.

W. A. Patterson, pres. and dir., \$75,-000 salary, \$7,547.25 bonus and indirect compensation; Otis E. Kline, exec. v.p., and dir., \$45,000 salary (up \$13,083.30), \$2,848.11 bonus and indir.; J. A. Herlihy, v.p., eng. and maint. and dir., \$42,000.08 salary (down \$3,666.64) \$3,471.30 bonus and indir.; D. F. Magarrell, v.p., transportation service, \$30,000 salary (up \$3.-333.24), \$2,243.70 bonus and indir.; D. R. Petty, v.p., flight operations, \$25,000.08 salary, \$1,853.70 bonus and indir.; Harold Crary, v.p., sales, \$20,000.08 salary (down \$666.56), \$3,882.90 bonus and indir.; Hal E. Nourse, v.p., economic controls, \$22,000.08 salary (up \$1,333.44), \$2,025.60 bonus and indir.; R. F. Ahrens, v.p., personnel, \$22,000.08 salary (up \$1,-333.44), \$1,849.34 bonus and indir.; R. W. Ireland, v.p., traffic administration, \$22,-500 salary (up \$820.80), \$3,032.10 bonus and indir.; Curtis Barkes, v.p., finance and property, \$22,000.08 salary (up \$1.-333.36), \$1,619.70 bonus and indir.; R. E. Johnson, v.p. and asst. to pres., \$21,000 salary, \$1,409.14 bonus and indir.; S. P. Martin, secy. and asst. to pres., \$13,-400.16 salary (up \$500), \$991.74 bonus and indir.; R. E. Bruno, comptroller, \$6,000 salary (entered office August 1, 1952) \$260.30 bonus and indir.; C. E. Blanchar, comptroller, \$10,400 salary (term expired July 31, 1952), \$500.52 bonus and indir.; A. M. DeVoursney, \$12,000 salary treas. (up \$1,519.92), \$614.98 bonus and indir.

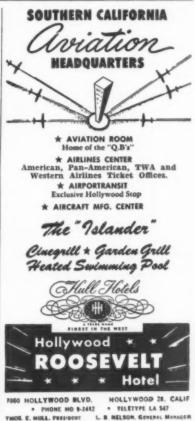
All-Cargo Carriers

RIDDLE AIRLINES, INC.

John Paul Riddle, pres. and dir., no salary, \$9,000 bonus and indirect compensation; Jean Helvey, v.p., and dir., \$12,500 salary (up \$500); B. W. Turner, secy. and dir., \$2,400 salary; H. T. Carpenter, treas., and dir., \$3,600 salary.







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SLICK AIRWAYS, INC.

Earl F. Slick, chairman, board of directors, no salary; Lewis J. Moorman, Jr., chairman, executive committee and dir., no salary; Thomas L. Grace, pres. and dir., \$18,900 salary (up \$2,775.01); William E. Hollan, exec. v.p., \$16,894.07 salary (up \$2,477.38); Joseph F. Grant, v.p., secy. and dir., \$14,824.29 salary (up \$2,115.90); David R. Stewart, v.p., treas. and dir., \$15,451.46 salary (up \$2,743.07); Henry P. Huff, v.p., oper. and maint., \$14,824.29 salary (up \$2,465.90); Matthew 514,624.29 salary (up \$2,405.90); Matthew (c. Wilkin, v.p. sales, \$14,824.29 salary (up \$2,465.90); John W. Walbert, asst. secy., \$8,434.38 salary (up \$1,811.88); Edwin B. Warwick, asst. treas., \$6,771.25 salary; William M. Miller, asst. secy., no salary.

Local Service Carriers

ALLEGHENY AIRLINES, INC.

Robert M. Love, pres. and dir., \$15,-000 salary; C. W. Wendt, v.p., treas. and dir., \$12,000 salary (up \$334); D. L. Miller, v.p., traffic and sales and dir., \$8,-500 salary (up \$500); R. B. Cotton, v.p., engineering and research, \$15,328 salary; E. K. Arnold, secy., \$6,000 salary (up \$300); W. J. Short, asst. treas., \$7,-200 salary (up \$300); H. G. Kenyon, asst. secy., \$6,000 salary (up \$150); C. H. Mc-Intosh, v.p., operations, \$5,843 salary (term expired June 14, 1952).

BONANZA AIR LINES, INC.

Edmund Converse, pres. and dir., no salary (down \$12,000); Wesley J.
Durston, v.p. and dir., no salary;
Florence J. Murphy, secy., treas. and dir., \$7,625 salary (up \$1,000); Earl Jochim, comptroller, \$6,500 salary (up \$613); M. E. Cole, v.p., traffic, \$9,720 salary (up \$497); M. W. Reynolds, v.p., operations \$11,641.46 salary (up \$2,-

CENTRAL AIRLINES, INC.

Keith Kahle, pres., \$12,000 salary; R. E. Harding, Jr., v.p., \$10,800 salary; Donald B. Ehrhart, v.p. and secy., \$9,000 salary; Marshall Gibbons, treas., \$6,-000 salary.

EMPIRE AIR LINES, INC.

T. E. Robinson, chairman of board, \$2,907.69 salary; Joe Lux, pres., no salsury; Gwin Hicks, v.p., \$4,638.46 salary; Frederic J. Orr, v.p., no salary; Arvid Nelson, secy. and treas., \$2,319.23 salary.

NOTE: Information shown is through July , 1952, since company merged with West oast Airlines August 4, 1952. Therefore no 1951 comparisons mere made.

FRONTIER AIRLINES, INC.

H. S. Darr, pres. and dir., \$24,000 salary; C. A. Myhre, exec. v.p., treas. and dir., \$11,800 salary (up \$1,383.50); R. M. Wilson, v.p., operations and dir., \$10,900 salary (up \$900.16); E. N. Levin, secy. and dir., no salary; E. W. Sexton, asst. treas., \$5,175 salary (up \$825); J. W. Wagner, asst. secy., \$4,185 salary; L. P. Blatter, comptroller, \$4,200 salary.

LAKE CENTRAL AIRLINES, INC.

Harry V. Wade, trustee, no salary; R. B. Stewart, pres. and dir., no salary; William H. Krieg, secy. and dir., no salary; Lloyd W. Hartman, exec. v.p. and treas., \$9,039 salary (up \$1,839); Robert W. Clifford, v.p., operations, \$10,-666.77 salary (up \$666.77).

MOHAWK AIRLINES, INC.

E. V. Underwood, pres. and dir., no salary; Robert E. Peach, exec. v.p., \$12,- 750 salary (up \$750); John R. Carver, v.p., and secy., \$10,249.86 salary (up \$1,749.96); Carl A. Benscoter, v.p., operations, \$11,250 salary (up \$750); W. D. Bosworth, treas., \$2,780.49 salary (up \$2,780.49); W. J. Fields, asst. treas., no salary; H. S. Goldsmith, asst. treas., \$5,-600.16 salary (up 16c); Lois P. Hornsecy., \$2,968.10 salary; brook, asst. Bertram J. Miner, chairman of board, no salary; L. N. Simmons, dir. and counsel, \$3,600 salary (up \$3,300).

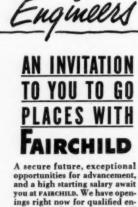
NORTH CENTRAL AIRLINES, INC.

Howard A. Morey, pres., no salary, \$1.425 bonus and indirect compensation; Donald A. Duff, v.p. and gen. mgr., \$8,-769.18 salary; Grove Webster, v.p., \$1,-384.62 salary; Frank N. Buttomer, v.p., traffic and sales, \$8,169.18 salary (up \$369.18); Arthur E. Schwandt, secy.treas., \$8,298.41 salary (up \$987.73); Bernard Sweet, asst., treas. \$4,961.78 salary (up \$244.93); Arthur E. A. Mueller, chairman of board, no salary, \$1,475 bonus and indir.; H. N. Carr, \$2,688.45 salary, \$400 bonus and indir.; Francis M. Higgins, \$12,000.04 salary (up 4c).

NOTE: Morey was vice president and director until elected president January 1, 1953. Duff was vice president and general manager from May 15, until his death on November 14, 1952. Mueller was also president from October 15, 1952 until January 1, 1953. Carr was executive vice president from April 1951 to March 15, 1952 when he resigned. Higgins was president from April, 1951 until October 15, 1952, when he resigned.

OZARK AIR LINES, INC.

B. T. Mattingly, chairman of board, \$1,875 salary (up \$1,875), \$1,020 bonus indirect compensation; and Hamilton, pres. and dir., \$15,875 salary (up \$3,625), \$120 bonus and indir.; A. G. Heyne, secy. and dir., \$750 salary (up \$750), \$1,470 bonus and indir.; F. W. Jones, treas. and dir., \$7,200 salary, \$100



opportunities for advancement, and a high starting salary await you at FAIRCHILD. We have openings right now for qualified engineers and designers in all phases of aircraft manufactur-

Paid vacations, liberal health and life insurance coverage, 5-day, 40-hour week as a base. Premium is paid when longer work week is scheduled.



Earl E. Morton, Chief for Aerodynamics. Has had many years of ex-perience in aircraft manufacturing and was responsible for engineering on many now famous aircraft.





HAGERSTOWN, MARYLAND

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Exhibit at the 2nd International Aviation Trade Show

Statler Hotel, New York, June 9-11

WE WILL SEE YOU AT OUR BOOTH

bonus and indir.; G. O. Shaver, dir. and pilot, \$9,682 salary (up \$1,100.35, \$100 bonus and indir.

PIEDMONT AVIATION, INC.

T. H. Davis, pres., treas., and dir., \$16,500 salary (up \$1,500); R. D. Hager, v.p., traffic and dir., \$11,520 salary (up \$520); R. S. Northington, v.p., fixed base div. and dir., \$6,600 (up \$600); M. F. Fare, secy. and dir., \$6,600 salary (up \$495). (up \$425).

PIONEER AIR LINES, INC.

Robert J. Smith, pres. and dir., \$15,000 salary (up \$2,500); Harold B. Seifert, v.p. and dir., \$13,200 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$13,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$13,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$13,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$1,500 salary (up \$1,800); Harding L. Lawrence, v.p. and dir., \$12,600 salary (up \$2,400); Eugene W. Bailey, secy.-treas. and dir., \$13,200 salary (up \$2,400); Wayne O. Richardson, asst. secy.-treas. \$7,200 salary; W. F. Long, chairman of board no selary. Long, chairman of board, no salary (down \$3,000).

SOUTHERN AIRWAYS, INC.

Frank W. Hulse, pres. and dir., \$12,-000 salary (up \$666.79); Hugh W. Davis, v.p., operations, \$10,584 salary (up \$504); Norman K. Arnold, v.p., sales, \$7,800 salary; Ike F. Jones, v.p. and dir., no salary; George F. Estey, secy. and treas., \$9,697.50 salary (up \$457.50); Cecil A. Beasley, asst. secy. and dir., \$25 salary.

SOUTHWEST AIRWAYS CO.

Leland Hayward, chairman of board, no salary; J. H. Connelly, pres. and dir., \$18,000 salary (up \$3,000); T. R. Mitchell, v.p., \$13,000 salary (up \$1,000); A. W. Johnson, treas. and dir., \$12,000 salary (up \$600); Walter Roche, seevy and dir. os salary. secy. and dir., no salary; Floyd L. Hen-drickson, asst. secy. and dir., no salary; Harry S. White, v.p. and dir., \$4,475 salary (down \$3,925); Raymond Costello, asst. secy., \$6,550 salary.

TRANS-TEXAS AIRWAYS

R. E. McKaughan, pres. and dir., \$25,333.36 salary (up \$2,835.28); H. E. \$20,333.30 Salary (up \$2,035.20); H. E. Erdmann, v.p. and dir., \$11,600 salary (up \$833.33); M. L. Muse, secy.-treas., \$7,920 salary (up \$770); W. C. Leatherwood, dir., \$5,760 salary (up \$56). Bonus and indirect compensation in amount of \$120 was also paid to each of the

WEST COAST AIRLINES, INC.

Nick Bez, pres. and dir., \$6,000 salary: H. A. Munter, v.p. and dir., \$14,000 salary; William Calvert, v.p. and dir., no salary; R. A. Duwe, secy.-treas., \$7,-800 salary; James W. Johnston, asst. secy., no salary.

E. W. WIGGINS AIRWAYS, INC.

Joseph Garside, pres. and dir., \$8,-000 salary; Harold E. Shaw, exec. v.p. and treas, and dir., \$7,800 salary; Elmer W. Wiggins, Jr., v.p. and dir., \$6,500 salary; Frederic S. Tobey, clerk and dir., \$6,000 salary; Harold E. Martin, asst. treas, and dir., \$4,680 salary; Sven G. Stenberg, asst. treas., \$5,200 salary (up \$520)





and become GREAT assets to the commercial and military might of our Nation!

TRANS WORLD AIRLINES of Kansas City and New York is one of the finest examples of such dynamic development. For TWA began in the late twenties when the five parent companies, were formed, backed only by private capital and the determination to render a vital new service to the Nation and its citizens.

It was then that Harris "Pop" Hanshue, founder of Western Express, began flying mail from Los Angeles to Salt Lake City in Douglas biplanes. Others, with 'independent' airlines carrying only passengers and freight without mail pay, included Jack Frye's Standard Airlines operating one eight passenger Fokker, Los Angeles, Phoenix and Tucson, and Jack Maddux' Maddux Airlines with Ford tri-motors flying San Francisco, Los Angeles, San Diego and Tijuana. The parental foursome came into being in 1929 when Transcontinental Air Transport, the Lindbergh Line, was founded. And in the same year surviving companies were merged to form Transcontinental and Western Air, with Pittsburgh Aviation Industries Corporation retaining five per cent of the stock. During those days with low-wing Northrop mail planes, TWA sped the mail across the country in 24 hours!

Today, fifty years after the famous Wright Brothers' first flight, Trans World Airlines flights are 'called' daily in 21 world centers abroad, including London, Paris, Rome and Bombay, as well as 60 U.S. cities.

Thus, on the golden anniversary of powered flight, NORTH AMERICAN AIRLINES, an independent carrier pioneering air coach in today's tempo, congratulates TWA and its management for its contribution in the development and growth of the Nation's air transport under the American free enterprise system.

(Third in a series - FOLLOWING THE TRAILS OF THE PIONEERS)

NORTH AMERICAN AIRLINES

First in Air Coach

International Airline Revenues & Expenses, Calendar 1952

Market	O'det feet	Auto Azzarea	of green	Detroit	de de la constante de la const	aut Integral	decision of	St. Hot Rat	Sold Strategy	AND CHARLING	archine to	and the second
merican traniff 4 S colonial	~	-	\$ 30,229 2,033,219 1,435,882 59,876	\$ 107,519 152,916 15,956 12,746	\$ 2,337	\$ 420,492 364,056 307,549 16,809	\$ 70,642 160,303 99,566 6,641	\$ 6,318	\$ 5,308,316 10,109,101 3,507,706 1,669,086	\$ 2,809,467 4,553,174 1,717,109 672,214	\$ 2,498,849 5,555,927 1,790,597 996,872	8 -192,931 -1,330,837 1,106,798 16,710
astern ational orthwest anagra	7,416,531 1,738,627 19,199,233 17,309,546	6,231,659 1,636,065 9,771,133 12,254,117	233,433 8,177 5,110,219 2,501,651	705,712 568,291	16,873 68,373	113,989 47,108 2,886,166 1,095,068	98,386 24,275 106,449 411,110	737,445 6,129 92,103 17,234	5,490,211 2,160,839 16,939,720 15,730,499	3,549,147 651,705 8,350,587 6,602,462	1,941,064 1,509,134 8,589,133 9,128,037	1,926,320 ~422,212 2,259,513 1,579,047
latin Amer. Atlantic Pacific Alaska	69,785,283 71,639,559 41,137,308 7,028,473	47,045,010 48,458,084 24,168,064 3,921,376	10,416,250 12,628,530 11,467,053 1,362,680	1,707,344 2,547,666 1,170,456		7,884,106 5,347,077 3,103,207 1,372,066	1,234,997 1,231,405 403,400 45,556	587,063 1,027,499 191,872 305,925	72,380,685 70,048,143 36,060,465 6,559,751	31,833,340 34,015,789 20,333,956 3,147,784	40,547,345 36,032,354 15,726,509 3,411,967	-2,595,402 1,591,416 5,076,843 468,722
WA mited	48,337,028 7,990,383	36,366,608 7,100,301	3,568,170 520,936	3,199,765		3,512,685 226,942	874,326 42,008	421,346	47,504,762 9,725,649	22,460,303 5,747,560	25,044,459 3,978,089	832,266 -1,735,266
OTALS	Figur	in above tabues for Americal to Sermud	lations were an Airlines i a: Eastern to	nclude that Puerto Rico	American Avi carrier's se National t	rvice to Mex	ico but not rthwest to	to Camada; Orient and H	303,194,933 ed by the airl for Braniff to onclulu, and U procedures.	South Americ	a; C & S to S	outh America

Local Service Airline Balance Sheet Data, Dec. 31, 1952

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Lauren	TOTALSEE	CURRENT	BANEST HERE	Pares Orea Tree	MEET DERENED	ES CURECULA	JONE THE	Strategic	Ordine.	opring	Sugarus
Allegheny * Bonanza Central Frontier Lake Central	2,220,696 786,627 888,178 1,520,792 516,199	\$ 886,771 315,647 382,170 969,801 331,295	\$ 425,094 1,579 2,987 10,566 1,787	903,320 398,601 322,256 431,758 172,845	\$ 5,511 65,269 180,765 104,777 10,272	\$ 440,611 420,338 675,634 655,129 471,370	151,053 254,119 50,000	11,267	\$ 103,440 41,663	\$ 513,660 537,319 363,824 813,086 83,039	\$ 1,162,985 -322,083 -405,399 2,577 -91,140
fohawk ** W. Central *** Deark Piedmont Pioneer	1,657,500 1,776,395 1,502,389 2,628,710 5,754,828	530,148 627,114 584,795 1,214,764 1,662,106	2,237 1,101 1,000 329,639 3,321	1,071,782 987,626 742,062 1,083,037 3,867,769	53,333 70,554 174,532 1,270 221,632	600,848 1,086,989 775,175 974,770 1,515,723	215,574 230,515 86,166 1,610,000	375 550 500,678	176,378	291,763 208,149 847,523 1,140,500 165,000	548,940 250,742 -207,026 337,062 1,963,427
Southern Southwest Frans-Texas West Coast	1,103,356 2,504,718 1,084,228 1,647,314 231,895	651,707 825,555 694,836 627,024 56,081	1,101 4,321 17,281 5,666 110,248	325,095 1,591,731 348,552 959,098 25,085	116,803 83,111 23,559 55,526 40,481	808,977 800,340 315,246 785,551 20,153	239,404 412,500 26,400 300,000	76 530 1,823	25,650 9,793	750,000 335,705 900,000 187,372 81,006	-695,101 995,643 -157,418 346,918 120,943
TOTALS	25,823,825	10,359,814	917,928	13,230,617	1,207,395	10,346,854	3,575,731	515,299	356,924	7,217,946	3,851,070
Hel, Air Serv. Los Angeles N.Y. Airways ##	490,954 672,559 1,211,418	265,839 227,636 404,492	250 13,010 41,634	137,042 425,545 534,764	Helicopter P 27,933 5,010 230,304	54,087 286,236 86,473	47,600 90,000	952	4,005	383,100 294,000 138,500	53,766 43,772 892,439
	** Formerly *** Formerly ** Figures 1	ncluie retroac Robinson Airli Visconsin Cent aclude assets rations Octobe	nes Corp. Cha ral Airlines. and liabilitie	nge in name w	s effective	December 16.	11 American Ai 2. 1952. ged with West				

Local Service Revenues & Expenses, Quarter Ended Dec. 31, 1952

AMELINES	Cold detartific	A STREET	and Research	STREET	AUS REGAR	AUES SECES BEILD	SE REEL HON-SCHELL	out and other strate	AND OF STATE	eschiold	Briefs ME OFER THE
Allegheny * Bonansa Braniff ** Central Frontier	\$ 1,166,246 403,366 138,290 712,426 1,226,506	\$ 402,117 195,769 151,149 90,244 430,629	\$ 724,773 193,068 -22,096 602,299 722,868	\$ 18,858 4,047 2,926 1,518 10,096	4,691 4,788 3,972 28,810	\$ 1,641 1,428 837 1,338 1,897	\$ 13,481 3,328 -4,878 27,950	939,673 422,741 246,534 565,886 1,234,373	\$ 429,199 181,126 106,160 249,657 569,501	\$ 510,474 241,615 140,374 316,229 664,873	\$ 226,573 -19,375 -108,244 147,540 -7,867
Lake Central Mohawk North Central Dzark Piedmont	329,180 645,068 953,717 790,982 1,525,116	71,793 371,468 399,903 248,360 861,160	260,180 223,317 530,568 531,723 619,347	10,759 7,356 15,952 6,151 14,282	9,092	333 846 2,082 1,782 5,623	6,480 29,570 4,415 1,760 2,501	339,201 623,321 984,702 764,918 1,215,832	136,717 333,487 455,965 400,346 650,067	202,484 289,834 528,737 364,572 565,765	-10,021 21,747 -30,985 26,064 309,284
Pioneer Southern Southwest Frans—Texas West Coast Wiggins	1,201,854 1,046,298 760,033 698,907 492,736 75,979	784,496 323,858 442,142 271,575 341,223 4,522	377,403 699,680 297,131 402,882 134,757 69,999	6,574 10,176 6,319 3,180 7,499 692	18,625 10,236 10,513 4,372	6,811 1,705 1,727 1,076 1,789	2,526 5,643 2,544 2,691 821 515	1,327,730 856,719 729,720 698,604 759,548 71,639	775,048 410,623 323,908 307,740 353,265 26,202	552,682 446,096 405,812 390,865 406,283 45,437	-125,876 189,579 30,313 303 -266,812 4,340
TOTALS	12,167,704	5,390,408	6,367,899	126,385	113,733	30,927	99,347	11,781,141	5,709,011	6,072,132	. 386,563
Hel. Air Service Los Angeles N.Y.Airwys***	127,915 165,582 56,507		122,810 165,361 56,507		Helicopter I	ail Services		111,170 159,594 126,342	59,871 109,583 58,424	51,298 50,011 67,918	16,744 5,988 -69,834
	* Includes ret	roactive Mail	pay adjustment				tions of lo	al service route	106 operated	by Braniff A	truaye se

Domestic Airline Traffic, February, 1953

Little	Street, and	Server State of State	ga production of the state of t	125	Se reco	strates	unite herent	and dot to the	Starte National	art for	AND SERVED	A SURPLE STREET	of Street
American Braniff** Capital Caribair C & S Colonial	382,751 102,819 146,484 12,065 41,802 24,876	47,619,000 929,000 16,122,000	304,941,000 59,981,000 83,216,000 1,760,000 24,820,000 11,691,000	56.74 57.22 52.78 64.96	146,551 169,531 1,036 65,206	839,296 98,487 228,846 82,516 8,898	206,629 255,983 1,606	26,123,496 3,705,974 5,208,009 77,521 1,783,266 669,708	40,384,299 7,039,579 11,445,697 168,425 3,030,275 1,331,443	52,64 45,50 46,03	1,727,259 1,997,399 65,256 742,740	6,857,871 1,771,390 1,913,118 62,950 762,860 303,240	98,54 96,85 97,39 99,51 97,05 95,36
Continental Delta Eastern Hawmiian National Northemst	25,806 80,864 380,249 26,075 80,166 25,558	9,948,000 39,402,000 210,174,000 3,416,000 60,709,000 4,900,000	19,638,000 58,824,000 320,542,000 6,389,000 81,947,000 9,423,000	66.98 65.57 53.47 74.08	35,388 159,328 472,882 2,770 137,427 10,658	13,040 107,190 293,091 52,957 17,269	333,860 658,411 95,099	1,062,829 4,396,988 23,312,079 387,542 6,834,707 493,884	2,305,700 7,141,665 42,742,673 804,558 10,309,001 942,257	61.57 54.54 48.17 66.30	1,515,054 5,666,955 282,140	620,760 1,527,682 5,560,580 222,688 1,638,376 382,858	98.44 96.43 98.22 99.90 97.24 85.82
Northwest Trans Pac. TWA United Western	60,677 9,802 191,780 246,133 62,437	41,211,000 1,257,000 148,054,000 158,888,000 24,313,000	77,839,000 3,271,000 222,404,000 252,606,000 41,287,000	52.94 38.43 66.57 62.90 58.89	228,332 905 801,435 1,656,319 115,513	113,517 63 655,303 951,233 53,423	248,666 6,687 1,513,309 2,073,512 83,835	4,649,247 111,391 17,148,590 19,905,209 2,575,015	8,937,465 278,122 23,062,915 38,978,499 4,410,285		1,374,429 116,834 4,504,356 5,751,849 1,037,933	1,385,538 110,592 4,584,915 5,937,836 1,097,524	96.96 99.43 97.39 96.01 94.18
TOTALS	• Include		1,580,579,000 st. ot include open nclude both sci	ations	of local ser		LOS operated t	118,450,455 y Franiff as	208,362,863	56.85 rer beta	34,539,034 meen Braniff	34,740,778 and MCA.	97.30

International Revenues & Expenses, Quarter Ended Dec. 31, 1952

Locust	O order agen	and A School	de la	AMES CORRESON	und Spreed	stute states of	de de la constante de la const	Sterute HON-18 AT	oute as.	and and and	eschelet	dept. At the Children
American Braniff C & S Colonial	\$ 1,162,617 2,288,251 1,003,590 361,288	\$ 938,808 1,595,039 615,171 331,386	\$ 22,084 513,071 268,412 14,994	\$ 26,626 41,253 5,173 3,714	\$ 533	\$ 114,018 84,667 92,727 3,383	\$ 15,777 48,519 23,948 1,521	4	1,222,525 2,644,772 887,917 371,267	621,846 1,182,871 420,398 145,366	\$ 600,679 1,461,901 467,519 225,901	-356,521
Eastern National Northwest Panagra PAA	1,689,313 421,257 5,002,700 4,748,675	1,572,878 392,260 2,463,904 3,353,736	35,535 2,216 1,246,245 625,151	233,401	5,960 21,303	26,154 11,948 854,595 277,501	24,199 8,338 32,252 121,177	31,449 535 287 14,571	1,111,913 551,757 2,627,582 3,950,100	664,137 183,683 2,176,064 1,116,969	447,776 368,074 451,518 2,833,131	577,400 -130,500 2,375,118 798,575
Letin Amer Atlantic Pacific Alaska	20,129,089 17,476,881 10,592,708 1,638,955	11,461,864 11,560,774 6,097,465 852,944	4,996,000 3,066,600 2,884,658 395,600	432,388 710,458 298,442		2,219,238 1,481,243 822,934 367,377	309,511 322,146 119,499 11,190	213,907 223,450 6,861	18,042,247 18,823,670 9,266,239 1,602,184	7,636,348 8,671,081 4,978,010 683,022	10,405,899 10,152,589 4,288,229 919,162	2,086,842 -1,346,789 1,326,469 36,771
TWA United	11,534,390 1,696,757	8,426,478 1,505,703	816,810 108,210	852,856		993,210 41,825	252,649 8,312	99,798	12,431,968 2,417,438	5,675,187 1,461,740	6,756,781 955,698	-897,578 -720,681
TOTALS	79,746,471	51,168,410	14,995,586	2,744,050	27,796	7,390,820	1,299,038	590,858	75,951,579	35,616,722	40,344,857	3,794,892

Local Service Airline Revenues & Expenses, Calendar 1952

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Allegheny (1 Bonanza Braniff(2 Central Empire (3 Frontier	\$ 3,755,016 1,343,473 260,042 1,808,158 641,980 4,837,419	\$ 1,643,091 612,397 243,143 363,277 269,033 1,711,487	\$ 1,944,820 694,720 4,164 1,493,827 346,527 2,900,934	\$ 70,577 5,107 4,323 6,459 9,075 26,994	13,465 6,323 13,075 117,275	\$ 7,944 5,039 1,147 4,656 1,562 9,754	8 71,709 7,237 8,654 11,975 54,824	\$ 3,874,344 1,386,583 368,000 2,139,927 649,569 4,693,274	\$ 1,825,802 615,545 160,173 951,075 336,786 2,187,795	\$ 2,048,542 771,038 207,827 1,188,852 312,783 2,505,479	8 -119,328 -43,110
Lake Central MCA (4 Mid-West (5 Mohawk(6 North Central(7 Ozark	1,299,397 552,127 127,435 2,194,151 3,223,078 3,007,577	295,913 351,526 5,593 1,153,784 1,470,536 805,597	949,225 179,723 121,648 907,151 1,681,541 2,163,091	26,756 6,971 25,593 55,861 27,778	6,264	1,984 1,510 27 3,109 8,032 5,222	16,487 5,207 64,558 4,751 1,760	1,349,128 620,192 151,462 2,120,860 3,307,674 2,884,709	611,210 244,191 54,294 1,104,254 1,561,107 1,512,862	737,918 376,001 97,168 1,016,606 1,746,567 1,371,847	-49,731 -68,065 -24,027 73,291 -84,596 122,868
Piedmont Pioneer Southern Southwest Trans-Texas West Coast(8 Wiggins	4,507,265 4,300,982 3,103,188 2,883,069 2,734,653 1,641,711 316,423	3,087,249 2,849,924 1,181,779 1,727,621 951,675 1,023,247 19,822	1,278,919 1,295,337 1,859,104 1,031,734 1,640,806 552,511 289,180	39,520 21,847 37,230 23,718 12,817 13,976 2,642	53,855 69,134 48,788 34,060 20,855	22,582 24,867 6,497 6,705 4,928 4,476	12,078 6,721 7,773 14,092 61,978 21,043 3,771	4,328,400 4,690,540 3,256,651 2,740,413 2,701,256 1,938,432 295,852	2,249,775 2,493,380 1,613,488 1,206,277 1,211,837 893,756	2,078,625 2,197,160 1,643,163 1,534,136 1,489,419 1,044,676 186,086	178,865 -389,558 -153,463 142,656 33,397 -296,721 20,571
TOTALS	42,537,144	19,766,694	21,334,962	417,244	405,239	120,085	374,618	43,497,266	20,943,373	22,553,893	-960,122
Hel. Air Service Los Angeles N.Y.Airways(9	523,221 463,066 56,507	::::	516,256 460,667 56,507			ail Services	* * * * *	437,294 481,189 126,342	254,933 291,678 58,424	182,360 189,511 67,918	85,926 -18,123 -69,834
	3) Figures are 4) Figures are 5) Mid-West Air 6) Formerly Rob 7) Formerly Wis	r operations through July, through Augus lines termina inson Airline consin Centra en West Coast	of local servings, the servings of the serving	ce route 10 Merger betw ly, and cov- service oper e in name we harge in ma	operated en West Co er operation rations May as effective e was effe	since August ast Airlines ns of local s 15, 1952, du August 23,	16, 1952, b and Sepire ervice rout e to non-re 1952. r 16, 1952.	y Braniff Airways was effective Aug e 106 (see footno newml of certifid West Coast being	te No. 2 about te by CAB,	n.)	merger.

International Report



France's SO 1310 Farfadet convertiplane is attracting considerable attention in Europe. SNCA du Sud-Ouest has started hovering flight trials with the model even though the Turbomeca Artouste II turbine and gearing to drive the propeller have not yet been installed (propeller shown in the photo above is a dummy). The rotor is driven by a 360-hp Arrius II gas generator which feeds compressed air to the tips.

BOAC Reveals Details of Comet Year

In a frank discussion of the first year of de Havilland Comet jetliner service, British Overseas Airways Corp. gives some interesting information on the technical side of jet transport operations.

In the first month mechanical delays were fairly prevalent and the average arrival time at terminals was behind schedule to an amount equal to nearly 40% of the journey time, but by the end of the year time lost by mechanical delays was reduced to nine per cent. The majority of initial troubles were of a type which could be quickly eliminated as each plane became "bedded down" in service; hydraulic faults, for instance, which were fairly prevalent at first, have since become neglible (two per cent of the total).

One of the most serious faults (which nearly led to the temporary grounding of the fleet) was the misting of windshields when the aircraft were on the final approach to Beirut and Khartoum in certain conditions of temperature and humidity. The cure, simple in principle but involving a fair amount of engineering, was to increase the flow of warm air across the inner surface of the windshield.

Another trouble involved the windshield wiper, which had to be replaced with a hydraulically driven type. Some evidence of cracking in the elevator skin called for its replacement in certain areas by a heavier gauge of metal. There was only one serious problem connected with the Ghost engines. After some months of trouble-free running, cracks began to appear in the centrifugal compressors, the cause of which was finally traced to high-frequency vibration. The cure was to crop the impeller blades by a small amount, not enough to affect the efficiency but sufficient to shift the frequency nodes outside the critical range.

The average of 0.73 failures per 1,000 flying hours compares favorably with BOAC's piston engines. The service life of the Ghost is being increased from 250 hours to 600 hours (with flame tube inspection at 200 hours; the introduction of a modified tube is expected to raise this figure to at least 300 hours or half the engine overhaul period).

Apart from the above-mentioned vibration cracks in the impellers, two compressors out of the first 50 time-expired engines were damaged beyond repair. On an average three turbine blades required replacement on each time-expired engine. In every case the damage to turbine blades was caused by objects passing through the engine, and there were no cases of replacement due to thermal stress or fatigue. There was no trouble with turbine discs and none have been replaced.

Some of the flame tubes have now run over 600 hours, and experience has shown that a large number of the defective tubes can be repaired by riveting and welding. Out of the tubes which are removed at intermediate inspections, approximately 15% are replaced, but the majority of those damaged are repairable.

As a result of the first year's operation of Ghost engines in BOAC service, and taking into account the early troubles mentioned above, the average running time for all Ghosts of the Comet fleet has reached 78% of permitted overhaul life. The engine overhaul cost per aircraft mile, based on the 600-hour engine life shortly to be introduced, compares favorably with highly developed piston engines. Thus the Ghost with, say, 270,000 miles flown between 600-hour overhauls, compares well with a piston engine flying perhaps 250,000 miles between 1,000-hour overhauls.

The record shows that 33% of the services arrived on time (or early) and 61% were within two hours of the schedule. Utilization rose from an initial three hours per day to 6½ hours per day in April.

The Comet Made Money for BOAC

The Comet made a profit in its first year of operations. This is categorically stated by BOAC chairman Sir Miles Thomas, who reports that the aircraft operated at an overall load factor of nearly 80% and "made sufficient profit during the period to cover the interest on capital expenditure. This calculation is on a realistic costing basis, exactly as applied to the corporation's other types of aircraft, and includes the cost of route proving and training flights spread proportionately over the life of the aircraft."

Sir Miles states that on the routes on which BOAC has been operating the Comet (connecting London with Johannesburg, Colombo, Singapore, and Tokyo) an average load factor of 75% shows a profit.



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INTERNATIONAL BRIEFS

First Fairey Gannet turboprop naval fighter has come off the production line; prototype first flew in 1949. Gannets should be in squadron service with the Royal Navy at the end of the year.

India is negotiating to buy 60 to 70 Dassault Ouragan jet fighters from France for delivery at the rate of 20 a month. French government is believed to be subsidizing the contract in a move to beat British competition. India may also order Mystere IV's.

Some of the **40 Balliol trainers** built by Boulton Paul are being sent to East Africa and Malaya for use against terrorists.

A ban on commercial planes bound for Israel flying over the territory of seven Arab states has been proposed by the Arab League Economic Boycott Committee of Israel.

Australia has ordered 40 Fairey Gannet turboprop naval fighters (30 for delivery in 1955) and a number of de Havilland Sea Venoms. The carrier Melbourne is being modified to take the planes.

Names of three Egyptian airports have been changed: Farouk International Airport to Cairo Airport; Fuad First Airport to Alexandria Airport; and Emir El-Said Airport to Luxor Airport.

In Union Aeromaritime de Transport's first three months of scheduled de Havilland Comet operations with an effective fleet of only two aircraft, a total of 2500 passengers were carried.

A 1900-mph wind tunnel is being built at Salisbury, near Adelaide, Australia. It is believed to the first large wind tunnel ever constructed in the Southern Hemisphere.

First Lockheed P2V patrol bomber for the French Navy has been delivered. A "sizeable quantity" of the planes are being supplied to France under MDAP.

Australian airlines carried less traffic in 1952 than in 1951. Passenger traffic was down 1.6% and mail and cargo declined 11.5%.

Spanish airline Aviacion y Comercia (Aviaco) and the Bristol Aeroplane Company have established an engine overhaul company at Madrid's Barajas airport. The new firm, known as Talleres Aeronauticos de Barajas, will initially overhaul Bristol Hercules engines used in the Bristol 170 transports of Iberia and Aviaco.

Australia's two trunk carriers are to withdraw from certain "country" routes in order "to improve the economy and efficiency of subsidiary routes and to avoid unsound and wasteful competition," according to Civil Aviation Minister H. L. Anthony. Queensland Airlines will take over two routes from TAA and Butler Air Transport will take over an ANA route.

Cyprus Airways has started operations to Benghazi and Tripoli in North Africa.

By arrangement with the Portuguese government Transportes Aereos Portugueses has taken the operation of Aero Portuguesa's Lisbon-Tangier-Casablanca route.

Main-spar failure of Central African Airways' Vickers Viking, which crashed two months ago, reportedly was originally caused through a wrong type of grease being used to coat an unplated bolt, causing a corrosive alkaline effect upon the main spar.

Deliveries of Fairchild C-119 transports to the Italian Air Force have started. The planes are being supplied to Italy under MDAP.

Philippine Air Force has bought an Aero Commander for communications work and may buy additional aircraft of this type.

Deliveries of Vickers Viscounts to Air France have been delayed; turboprop transport service is now unlikely to be inaugurated before July 20. One cause of the delay is the substitution of Bendix automatic pilots for the previously-installed British equipment.

Two bystanders were killed and 44 persons, including 27 airport visitors, were injured when a **KLM Convair 240** crashed while taking off from Amsterdam's Schipol airport on May 25.

London's new air terminal, primarily for BEA and European operators, has been put into use. Located near Waterloo station, it replaces the Kensington air station and can handle up to 16,000 passengers per day.

Hispano-Suiza's afterburner increases the thrust of a Rolls-Royce Nene by 33%, recent tests have proved. The Nene-plus-afterburner installation will now be flight tested in a Dassault Ouragan. The afterburner is also to be installed on a Tay engine.

Percival Pembroke transports and Provost trainers have been ordered by the Southern Rhodesian Air Force.

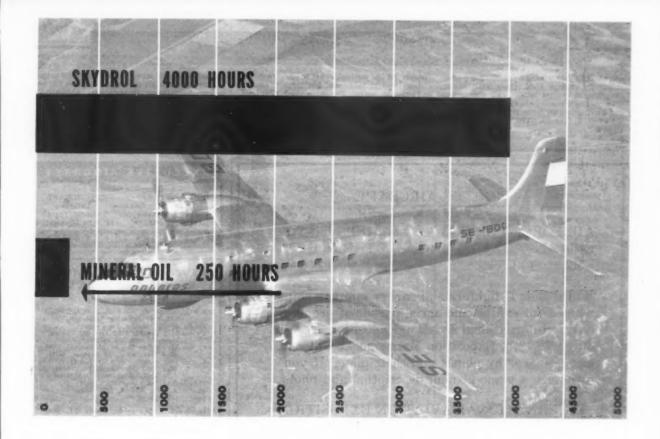
One crew member was killed when a Canadian Pacific Air Lines Canso amphibian crashed at Prince Rupert last month.

The title Fleet Air Arm has been re-introduced by the Royal Navy in place of the term Naval Aviation, used for the past seven years.

Three of Arab Airways' twin-engine de Havilland Dragon Rapides were destroyed when the company's hangar at Amman caught fire. It is stated that the planes were not insured.

Avro Canada has been awarded a \$250,000 design study contract for its CF-104 35-ton delta fighter. The twinengine plane will have air-to-air missiles as its armament.

In Eastern Germany the Olympia typewriter plant at Erfurt is now producing aircraft components.



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Letters (Continued from page 6)

selves on these matters the British aircraft industry will know that aircraft designs which qualify for a British Certificate of Airworthiness will be certified also in the United States. That will be of substantial benefit to Anglo-Ameri-

MARTIN SHARP

Public Relations Manager

The de Havilland Aircraft Company Limited

HESITANT NATURES

To the Editor:

It appears to me, after reading Art Droge's letter in your April 13 issue, that many readers have failed to grasp the full meaning and intent of Ben O. Howard's lambaste of industry safety tactics. The apparent attitude of "We have done well enough and it is difficult or impossible to do better in the way of aviation safety" is, as I have experienced after 10 years in airline and related aviation industry, typical of some individuals.

This is well illustrated by the hesitant nature to design or to change existing designs for the sake of safety for economic reasons. It is true that changes in aircraft design are costly, but will we ever improve our safety factor, particularly with the ever increasing complexity of modern aircraft, if all of us don't strive to do so in every possible way?

NAME WITHHELD

Aero, Engineer CAA Region 1

BARRIERS BROKEN

To The Editor:

Congratulations on having the integrity and common sense to publish Ben Howard's excellent article on our safety tactics. It's superb thinking on his part and represents much all of us have believed for a long, long time.

These sentiments are expressed from one who has approached very near to two million miles of flying-most of it airline.

those cardboard characters Only who lack guts and nerve to admit their own errors can gainsay Howard on 99% of his statements.

Good . . . all around. Now that you've broken the barriers of pomposity once, (which is rather rare for your publication), summon the courage to do so again. You'll have a better magazine and you'll eventually do a lot of good.

ERNEST K. GANN

Pebble Beach, California

CABIN CONTROLS

To the Editor:

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We want you to know that we think you did an exceptionally good job on the article titled "Executive Cabin Controls Developed," appearing in the March 30 issue of your publication.

We would like to distribute reprints of the article to our field organization and to several of our customer groups. Are reprints available?

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Empire Building. If you want to see a new empire in the making, go to the northwest of this great country of ours and see what's happening. A few weeks ago I flew to all 19 stops of West Coast Airlines lying east of the Cascade Mountains and it was a refreshing

and rewarding experience.

Irrigation is opening up vast new agricultural areas. Power is making possible big industrial developments. airplane is pioneering new and sig-Magnificent nificant trade routes. seenery abounds. The population is growing and the atmosphere of newness is everywhere. And I had a flight over Hell's Canyon in Idaho's Snake River on one of the most interesting scheduled airline routes to be found anywhere. Out there America is still growing, still developing, on a magnificent scale.

West Coast Airlines is expanding like everything else. Until it merged with Empire Air Lines, WCA kept west of the Cascades along the coast. Empire pioneered a new local service network running from Spokane, Wash., south and east like a crescent to Idaho Falls, Idaho. Empire had a wonderful spirit and a fine gang behind it, but the network wasn't strong enough to match the laws of economics which beset all airlines today. The route didn't go far enough in any direction. The CAB okeyed the merger last year and awarded several new routes to connect the two systems. The results became noticeable immediately.

Yakima Hub. As an example of growth, WCA now has 24 flights per day at Yakima, the new hub of the combined systems, and 20 at Walla Walla. WCA now has 33 stops altogether, served with 12 DC-3's, and the average passenger haul has gone up from 143 miles to 178 miles. Passengermiles jumped from 735,922 in February of last year to 1,802,567 in the same month this year. The merger was made effective only last September, but already WCA has become a big factor in this new and growing empire. It isn't unusual to see five WCA planes on the Yakima ramp at one time.

We often talk about the airplane pioneering new trade routes and it's happening out there now. The Cascades have always been a formidable natural barrier cutting the State of Washington in half. WCA and Northwest Airlines are overcoming this barrier, but the interesting thing is that the people of eastern Washington are doing more and more trading with Portland, Oregon. The Columbia River coming down to Portland from eastern Washington was the old trade route and WCA is finding a lot of good airline business which follows the old water-level route to Portland. Unless Seattle wakes up, it

will lose more and more business to its Oregon rival.

I left Seattle late in the afternoon for Ellensburg and Yakima and after a cup of coffee with H. G. Skull, WCA's station manager there, I transferred to another WCA plane and flew on to Wenatchee, and Spokane, Ephrata.

where I spent the night.

I hadn't been in Wenatchee since 1936, when I flew west through there on 10-passenger Lockheed Electra of Northwest Airlines. I think the terminal is still the same. At Spokane I staved at the Hotel Davenport, a very fine and well-run hotel, one of the best in the west, although those Diesel trains with their shrieking horns going through the center of town kept me awake. I'll take airplane noise anytime in preference to those western trains.

A-1 Terminal. Yakima is one of the keys to the new northwest empire and it can boast one of the finest little airport terminals to be found in the U.S.A. Bob and Helen Paradis operate a fine restaurant and cocktail lounge on the second floor and a coffee bar and fountain in the lobby, and incidentally this snack bar sits right in the lobby without any enclosure. The concessions are well patronized by people from town. Yakima has 40,000 population, but its attractive terminal is far superior to most terminals in cities of 300,000. Yakima's airport gets "A" in my books.

From Yakima to Spokane my captain was Don Alldredge, who won one of American Aviation's pilot certificates last year. He's a live-wire chap and a real booster for WCA.

I had looked forward eagerly to the Spokane-Boise cutoff flight ever since Empire got CAB's okey several years ago, because the route crossed over one of the wildest, most isolated areas in the United States. The Snake River, unknown to most of the country, is truly a great river, but the niche it carved through the rugged mountains lies in country that has been largely inaccessible until recent years.

South to Boise. The one daily southbound flight leaves Seattle at 7 am and unfortunately for the tourist. the northbound flight over the Snake River country is at night. But it was worth the early rising to make the southbound trip. First stop was Coeur d'Alene, Idaho, and next was the stop serving Pullman, Wash., and Moscow, Idaho, each being an educational center and only a few miles apart. The country is rolling up there and quite attractive. Lots of wheat grown in this area. The wild mountains of Idaho were just to the east.

Then we came to Lewiston, Idaho,

and Clarkston, Wash., on either side of the Snake River, and they're quite a sight. The DC-3 flies over the wheatgrowing plateau and all of a sudden comes to a very abrupt drop. At the bottom of the drop are the two towns, and the airport is on a plateau overlooking the river and towns. The guy who figured out where to build an airport ought to get a medal, but the field is actually quite good with excellent approaches. The only handicap is wind and knowing how to land on a hot summer day. Personally I'd also like a little ceiling.

I changed planes again, the one from Spokane being headed west to-ward Yakima, and got on a DC-3 captained by Fred Stanley, who had been with Empire since its start. We were now to make the non-stop flight of an hour and ten minutes to Boise. capital of Idaho, but if you want to go by train it takes 21 hours by a roundabout route. If you don't think there's any wild country left in the U.S., I recommend this flight.

Deepest Canyon. We followed the winding Snake River and pretty soon Fred Stanley invited me up front so I could get a good view of Hell's Canyon. If you've seen the Grand Canyon, just add on a couple of thousand feet and you'll appreciate how deep this canyon is. It's 7,000 feet sheer drop from the top of the mountains to the roaring river at the bottom. We were flying at about 10,000 and of course the river looked pretty small and unimportant at that altitude and in the midst of such king-size terrain.

Hell's Canyon is apparently the deepest declivity anywhere, but it lacks the fantastic colors of Grand Canyon. The rocks are grey and the area is heavily forested. And the canyon is very deep only for a relatively small area, although the river winds for a hundred miles or so in a declivity ranging from 3,000 to 5,000 feet in

depth.

Good Dam Site. This is where the big government power battle is taking place. Sooner or later there will be a dam at Hell's Canyon and you'll be able to drive there. It seems to me you could back up enough water to create enough power and irrigation for an entire nation. The dam will destroy the virgin wilderness of the area, but it will also open up new territory and do a lot of good and actually make a more useful playground.

You can take spectacular river trips in boats either from Lewiston on the north or from several points in the south. One of these days I'd like to make such a trip. I gather that it's one of the most unusual tourist trips available in the world. Wildlife abounds along the canyon walls. Blaine Stubblefield, who used to be on the staff of the old Aviation magazine, retired to Idaho and operates one of the boat services

down the river.

I feasted on the views from the cockpit and then went back to my seat and saw the area of McCall and Payette to the east, a favorite place for fishing, camping, and hunting, and before long we swung down over the mountains into the dry, arid section of Boise and landed on the fine airport,



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GOOD FRIENDS IN BAD WEATHER

COLLINS 51V-2 Glide Slope Receiver

Developed expressly for commercial airline and corporation aircraft . . . not a military development. The 51V-2 is designed to ARINC Specification #519 as revised during April, 1952 - it incorporates the most desirable characteristics of a Glide Slope Receiver according to leading airlines. The RF section's AGC is essentially flat, being less than 1.0 db from 700 to 14,000 microvolts and 1.50 db from 700 to 100,000 microvolts. This feature, together with 12 db audio feedback and voltage regulated AGC delay bias, permits setting of the flag current to lower limits which give better alarm indication. A most outstanding feature of the 51V-2 receiver is its stability of deflection characteristics with reduced tube transconductance and changes in line voltage. ARINC tubes are used throughout the receiver. Conducted and radiated interference has been reduced. Susceptibility characteristics are unusually good; spurious responses are approximately 70 db down. The 51V-2 is electrically and mechanically interchangeable with its forerunner, the Collins 51V-1. Both AC and DC power supplies are interchangeable on the two models.

COLLINS 51Z-1 Marker Beacon Receiver

Another performance-proved aviation aid designed to round out the Collins line. The 51Z Marker Beacon Receiver, fixed tuned to 75 MC, uses either AC or DC power... the same power supply used in 51V Glide Slope Receivers. Rear plug connection for use in Collins 350B extractor-type shockmount. Spurious frequency response is 75 db down from desired frequency, less than 10 microvolt RF radiation. Excellent squelch characteristic curve minimizes twilight indications. A single short ½ ATR case is used. Its construction is similar to that of the 51V receiver case. ARINC tubes are used throughout. The 51Z is designed to meet forthcoming ARINC specification on Marker Beacon Receivers.

Collins-designed 3 light indicator has standard Hi-Lo switch and push-to-test indicator lamps. The lights and switch are also available in kit form if it is desired to mount the marker indicator lights on the aircraft panel vertically, horizontally or differently than the standard triangular mounting pattern.



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News at Deadline

Aircraft Heads Called to Pentagon

Aircraft industry officials, who were recently disappointed by the lack of information provided at a Williamsburg, Va., meeting with Defense Department heads, may be getting what they want as this issue goes to press. A sudden meeting was called by Air Force Secretary Harold E. Talbott for June 2, to discuss procurement problems and the effects of the proposed budget cuts.

Ike Would End MSA Independence

President Eisenhower has sent to Congress a reorganization plan under which the Mutual Security Agency would lose its independent status. Funds for the off-shore procurement program, however, which has been administered through MSA, would not be affected.

The President proposes to create a new Foreign Operations Administration and to transfer to it the functions of MSA and other foreign-aid activities.

Treasury Secretary Humphrey has told Congress that the Administration's foreign-aid spending will come to \$6.5 billion, including a cash outlay of \$5 billion for military goods. About \$1.2 billion is to go for defense financing in Europe, and for support of the war in Indo-China, he said; the remaining \$3.8 billion will go largely for off-shore procurement.

Navy Cuts 700 Planes From Budget

A Navy budget request for \$9.65 billion for ship and aircraft construction involves a slower-than-normal ship modernization schedule and 700 fewer planes than were proposed in the Truman budget. It is nevertheless "a sound program," according to Navy Secretary Robert B. Anderson, who told the Senate Armed Services Appropriations Subcommittee that it would result in a "net increase in combat effectiveness."

Anderson testified that about onethird of the combat missions in Korea are being flown by Navy and Marine aircraft.

Supersonic YF-100 Interceptor Flies

The Air Force's first supersonic fighter, the North American YF-100, reportedly made its first flight at Edwards AFB on May 25. Security regulations prevent any confirmation of the flight, North American officials announced.

The YF-100 has wings swept back at 45° and is powered by a P&W J57 engine (10,000 pounds thrust). North American is well ahead of schedule on the aircraft and has received a production order from the USAF for the F-100A.

Bill Would Rotate JCS Chairmanship

Rep. W. Sterling Cole (R., N. Y.) has introduced a bill (H.R. 5473) requiring the Chairmanship of the Joint Chiefs of Staff to be rotated regularly among the services. It was referred to the House Committee on Armed Services.

Cole, a member of the Armed Services Committee, said his proposal was inspired by apprehension in and out of Congress that the Chairman might become "all-powerful" in the traditions of the "Prussian militarism." He said it also should strengthen the defense establishment by providing "a balance of thinking and a rotation of military philosophy."

Shipping Firm Control For Japan Air Lines

Effective control of Japan Air Lines (JAL) has been gained by OSK, the Japanese steamship company which is backing the proposed Japan International World Airways (JIWA) and which works closely with California Eastern Airways.

OSK will also have effective control of the private interests in the new Japanese airline corporation which is being created with 50% participation by the government and 50% by private interests (the latter will comprise JAL, JIWA/OSK, and the Iino steamship company). JAL is expected to be formally absorbed into the new corporation next month.

L. A. to Paris, Non-stop

The first non-stop flight from Los Angeles to Paris was completed by a Transport Aeriens Intercontinentaux Douglas DC-6B on May 29. The delivery flight of 5700 miles took 21 hours 31 minutes.

Raymond Sawyer to Succeed Verner in CAB

New executive director of CAB will be Raymond Sawyer, according to reliable reports. Sawyer, now in the general counsel's office of the USAF, would succeed James M. Verner to the \$13,000a-year job, the highest beneath the Board-membership level.

Sawyer has had experience in regulation with the Federal Communications Commission. He will become the first major Republican appointment to a top CAB staff policy job. Still vacant is the post of CAB enforcement chief, vacated by Oliver Carter in March.

Comet Flies Atlantic

First trans-Atlantic Comet flight took place May 29 when an RCAF Comet IA flew from London to Ottawa in 10½ hours, via Keflavik and Goose Bay. The plane will visit the United States this month (see page 15).

Wolfe Elected PAC Board Chairman

Tom Wolfe, president of Pacific Airmotive Corp., has been elected chairman of the board. He succeeds Arthur C. Stewart, vice president of the Union Oil Co., which holds a controlling interest in PAC. Stewart, who remains as a director, said that the oil company feels that PAC's management has reached the point where it can assume full control of its own affairs.

Stockholders have approved a proposal to increase PAC's authorized common stock from one million to three million shares, but there are no plans for immediate issuance.

Top NWA Officials To Move to N. Y.

Harold R. Harris, president of Northwest Airlines, and six other officials of the company will move their headquarters from St. Paul to New York some time this summer.

Included in the move are James W. Mariner, vice president-sales; E. I. Whyatt, vice president and comptroller; Linus Glotzbach, vice president and assistant to the president; Willis Player, vice president-public relations; Dale Merrick, assistant vice president-properties, and C. L. Stewart, assistant vice president-plans. All operations officials remain in St. Paul.

TION

Harris said he contemplates an organization somewhat similar to TWA, which has Kansas City and New York offices. The above officials, he said, will probably spend over half of their time in New York and the remainder in St. Paul or other points on the system. He pointed out that most of NWA's stock is held in the east, that it obtains financing in New York, and that the new offices will be closer to Washington.

Bilateral Talks with Canada Rumored

Talks designed to revise the bilateral air agreement between the U. S. and Canada are due to start in the fall, according to the Canadian Financial Post. Authorities in the U. S. report no knowledge of any formal request for such talks. Canadian transport minister Lionel Chevrier has stated that "there has been some question of revising the present bilateral [but] no conclusion has been reached as yet."

Changes desired by Canada would reportedly involve opening routes for shared use by pairs of American and Canadian carriers, and abandonment of the practice of dividing them up on the basis of "swapping."

Balboa Conference Set

A prehearing conference on the Reopened New York-Balboa Through Service Proceeding on June 8 has been called for by the CAB. The Board plans to ask the parties to the action to consider ways of expediting it. Designation of an examiner is to be made at a later date.

Japanese Jet Engine

A Japanese jet engine for a Japanese jet trainer may be built by Omiya Fuji Industry, which goes into aircraft production this year assembling the Temco T-34 Mentor for the Japanese National Security Force.

Structural Failure In Comet Crash

Complete structural failure was the cause of the crash of the BOAC de Havilland Comet I near Calcutta on May 2, according to a British Civil Aviation Ministry investigator who gave evidence during the Indian Government's inquiry. Fire followed the failure. The jetliner's left horizontal stabilizer and elevator had been struck by a fairly heavy body, which had not been identified.

There was no evidence of turbine disk failure or of the aircraft's being struck by lightning, the official stated, nor was there any evidence that poor material or workmanship caused the failure.

B-47 Stratojet Record Flights Revealed

A Boeing B-47 Stratojet last year flew 12,000 miles in 24 hours over the southern and western parts of the U. S., dropping a five-ton bomb at the half-way mark "to simulate a long-range strategic mission." The plane averaged 500 mph in its flight over a distance equivalent to half the distance around the world.

Other Stratojets made the first jet flight over the North Pole and flew from Maine to England without refueling, averaging 555 mph during the 3120-mile flight.

More Canted Deck Carriers Planned

"Canted" decks are planned by the Navy for three Essex-class carriers at a cost of about \$15 million. The new deck design permits faster and safer landings and take-offs, since the flight path of aircraft is angled out away from the bow of the carrier, where planes may be parked.

Higher Residual Values for Transports

Higher residual values for postwar aircraft will be applied by the CAB in determining mail rates for periods beginning on or about January 1, 1953. Under a new policy the CAB is now using a retirement value of 15% of cost instead of the 10% formerly used.

Applied to a recent case involving Northeast Airlines Convairs, this policy meant \$17,000 less depreciation expense that the carrier could claim for a one-year period.

CAOA Meeting Set

The Corporation Aircraft Owners Association has set October 29-30 for its Sixth Annual Forum and Meeting at the Park Plaza Hotel, St. Louis, Mo. The first day will be devoted to a business meeting and a closed round-table discussion. The forum will be held on the second day, climaxed by the annual banquet during which safety service and economy awards will be made to members.

New ATA Operations Group Elected

New officers of the Air Transport Association's Operations Conference include: W. T. Arthur, president (Delta-C&S); D. R. Petty, first v.p. (United); S. L. Shannon, second v.p. (Eastern). The Conference has eliminated its executive committee and has established instead an advisory committee of six airlines, which rotates half its membership each year.

Investigation of Local Service Proposed

It is time that Congress determine whether or not local service airlines are here to stay, according to Rep. Lloyd M. Bentsen, Jr. (D., Tex.). An investigation of the status and prospects of the local carriers by the House Commerce Committee has been proposed by Rep. Bentsen in House Resolution 257. The resolution has been referred to the House Rules Committee.

Bentsen asserts that the local service carriers are caught in a difficult position because their short-term certificates make it impossible to plan for the future. An investigation, he feels, should be conducted to assess the results of the local service "experiment."

CAA Drops 172 People From Washington Staff

Reorganization and budget cuts in CAA's Washington staff involve an estimated annual savings exceeding one half million dollars, and involve 172 reduction-in-force notices, according to official records.

As of June 1 the breakdown of RIF notices called for: 30 notices with offer of reassignment in the same grade; 59 notices involving job offers at lower grades; and 83 notices with no offer of assignment. A total of 103 authorized positions have been eliminated, including some vacancies which had been held unfilled.

Safety Offices Closed

CAA has eliminated thirteen Aviation Safety District offices as an efficiency move at an estimated annual saving of about \$100,000. Offices dropped are Mobile, Memphis, Orlando, El Paso, Syracuse, Buffalo, Baltimore, Roanoke, Clarksburg, Toledo, Elmhurst (Ill.) and E. St. Louis. Territories are being consolidated with other offices and one new ASDO will be located at Charleston, W. Va.

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